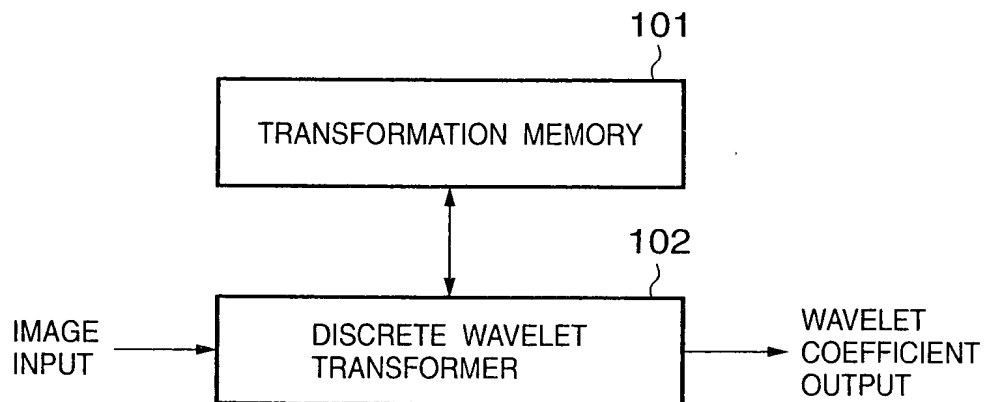


**FIG. 1**



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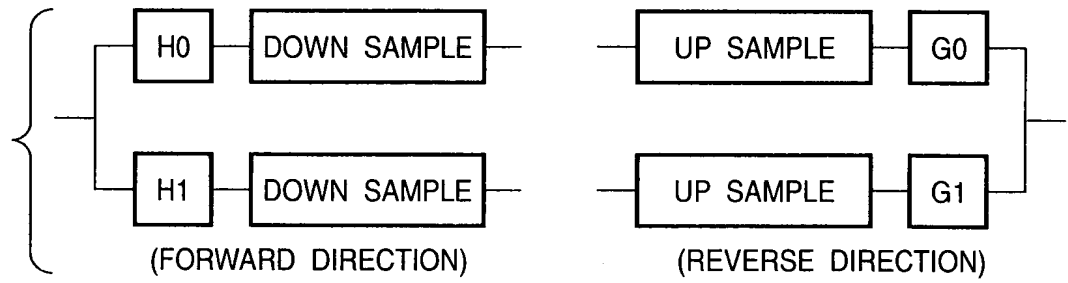
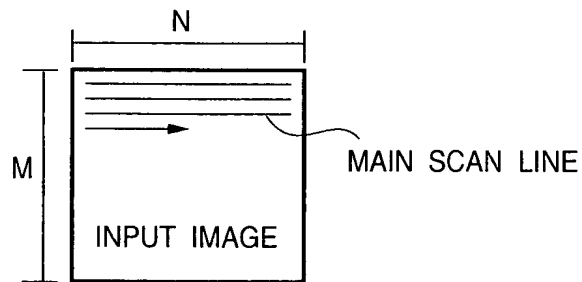
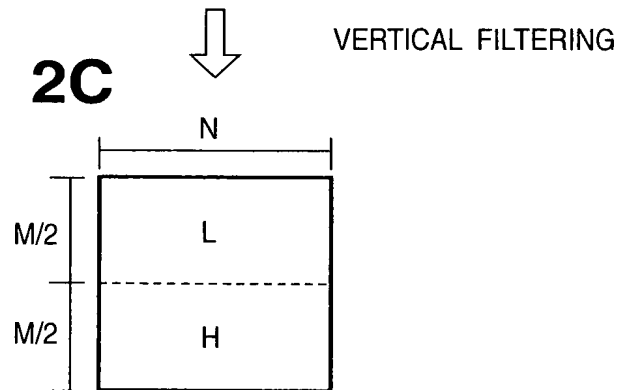
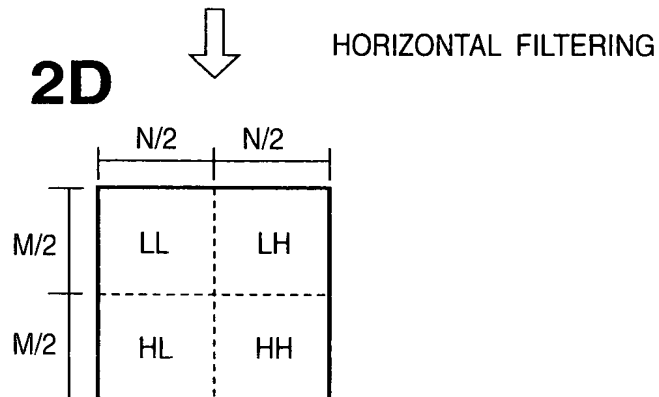
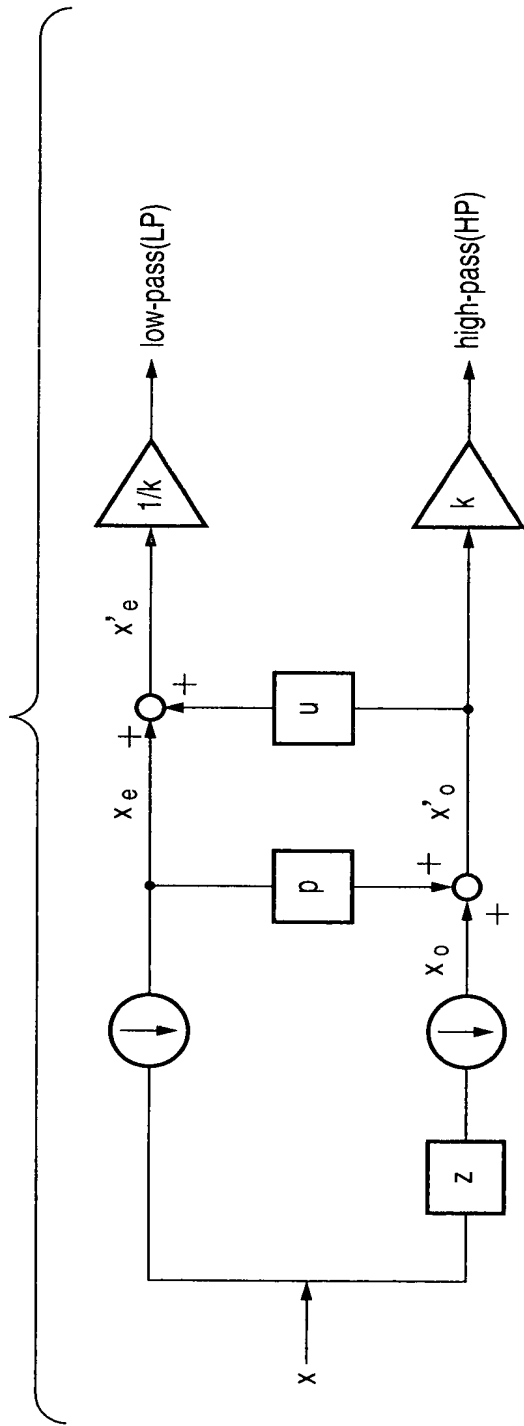
**FIG. 2A****FIG. 2B****FIG. 2C****FIG. 2D**

FIG. 3



$$X = (x_0, x_1, x_2, x_3, x_4, \dots)$$

$$X_e = (x_0, x_2, x_4, \dots)$$

$$X_o = (x_1, x_3, x_5, \dots)$$

$$X'_o = X_o + pX_e$$

$$X'_e = X_e + uX'_o$$

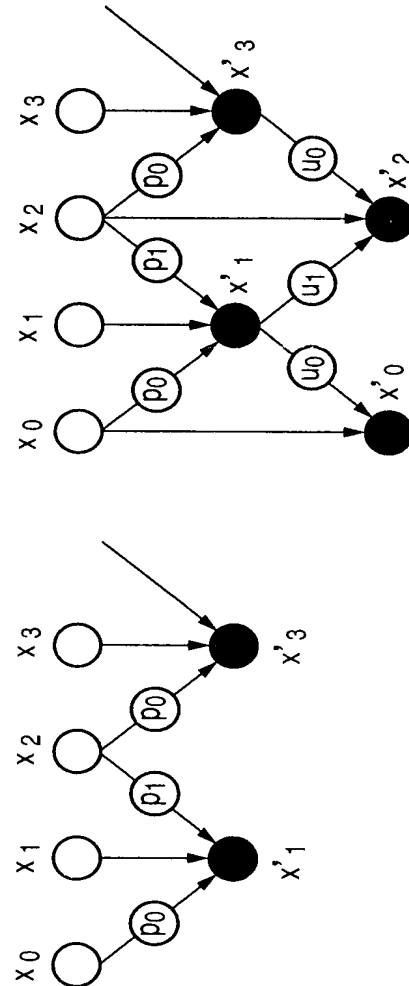
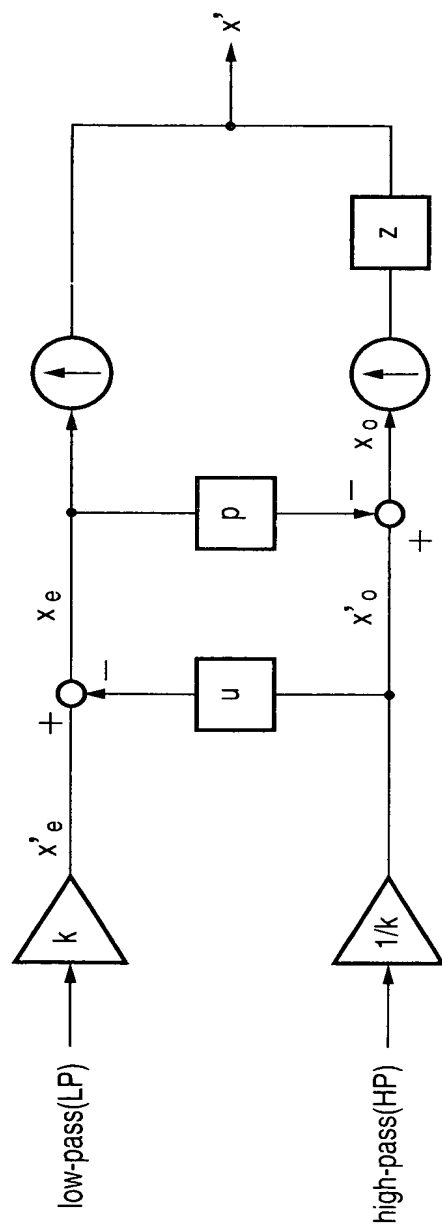
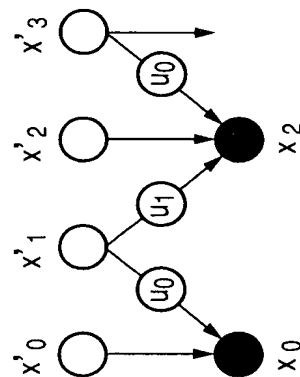


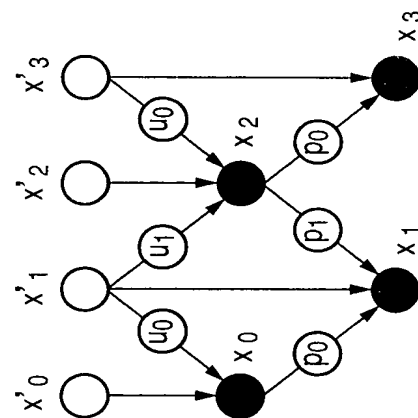
FIG. 4



$$X_e = X'_e - uX'_0$$



$$X_o = X'_o - pX'_e$$



$$X_e = (x_0, x_2, x_4 \dots)$$

$$X_o = (x_1, x_3, x_5 \dots)$$



$$X = (x_0, x_1, x_2, x_3, x_4 \dots)$$

FIG. 5

Filter	Filter coefficients	
	FORWARD DIRECTION	REVERSE DIRECTION
5×3 filter	$H0 = [-1, 2, 6, 2, -1] / 8$ $H1 = [-1, 2, -1] / 2$	$G0 = [1, 2, 1] / 2$ $G1 = [-1, -2, 6, -2, -1] / 8$

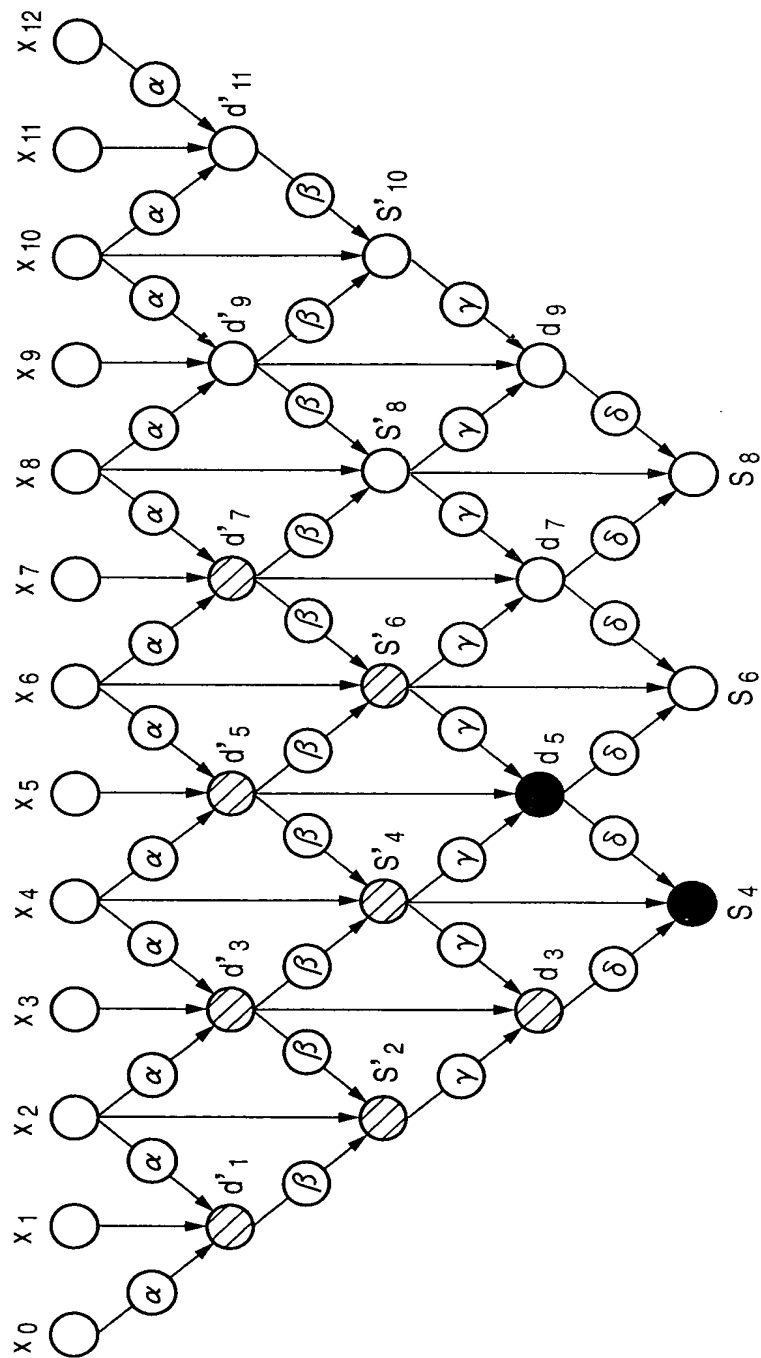
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FIG. 6

Filter	Lifting coefficients	
	FORWARD DIRECTION	REVERSE DIRECTION
5×3 filter	$\begin{aligned} p &= (-1, -1) / 2 \\ u &= (1, 1) / 4 \end{aligned}$	$\begin{aligned} p &= (-1, -1) / 2 \\ u &= (1, 1) / 4 \end{aligned}$

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FIG. 7



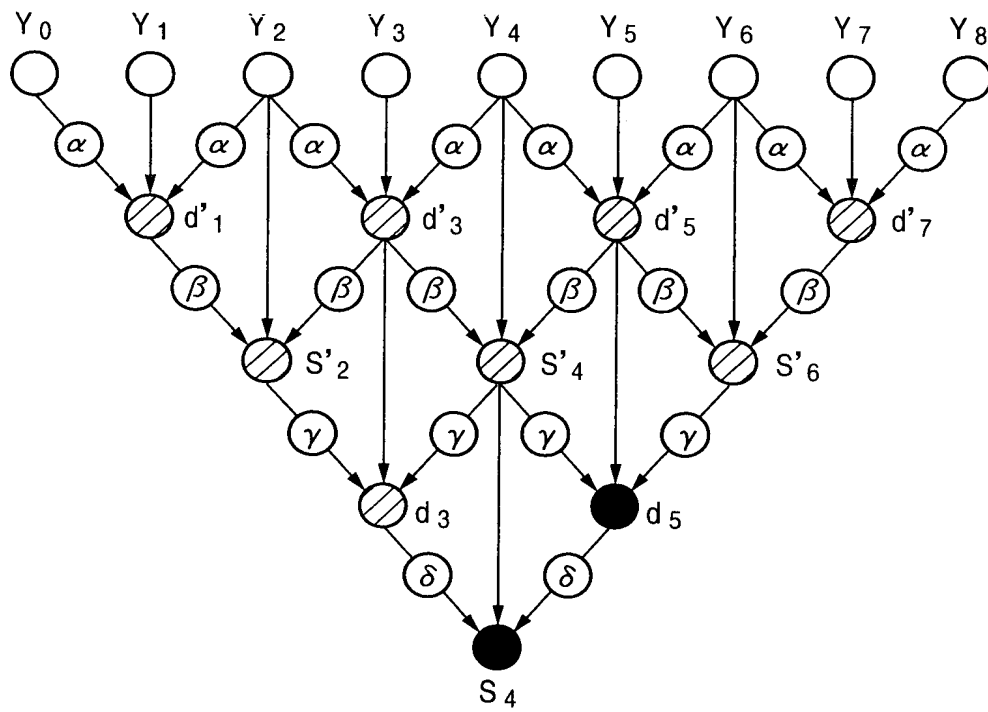
**FIG. 8**

FIG. 9

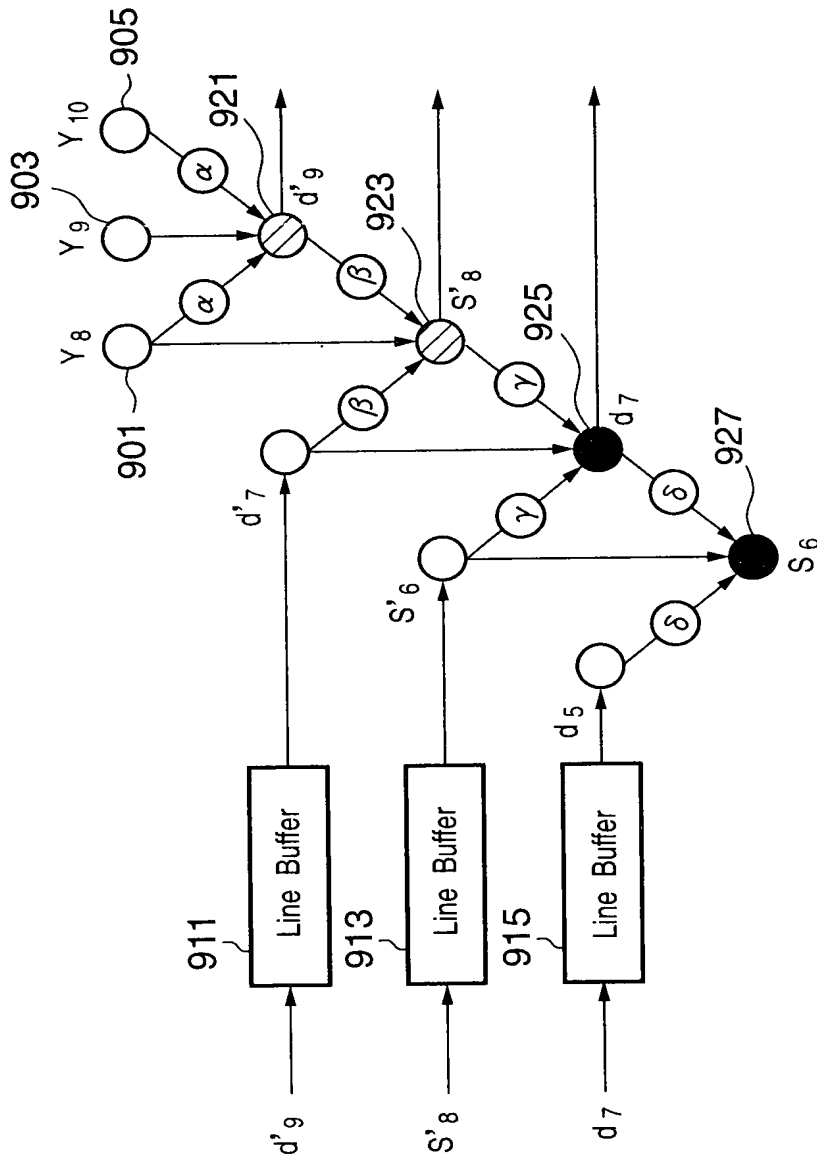


FIG. 10

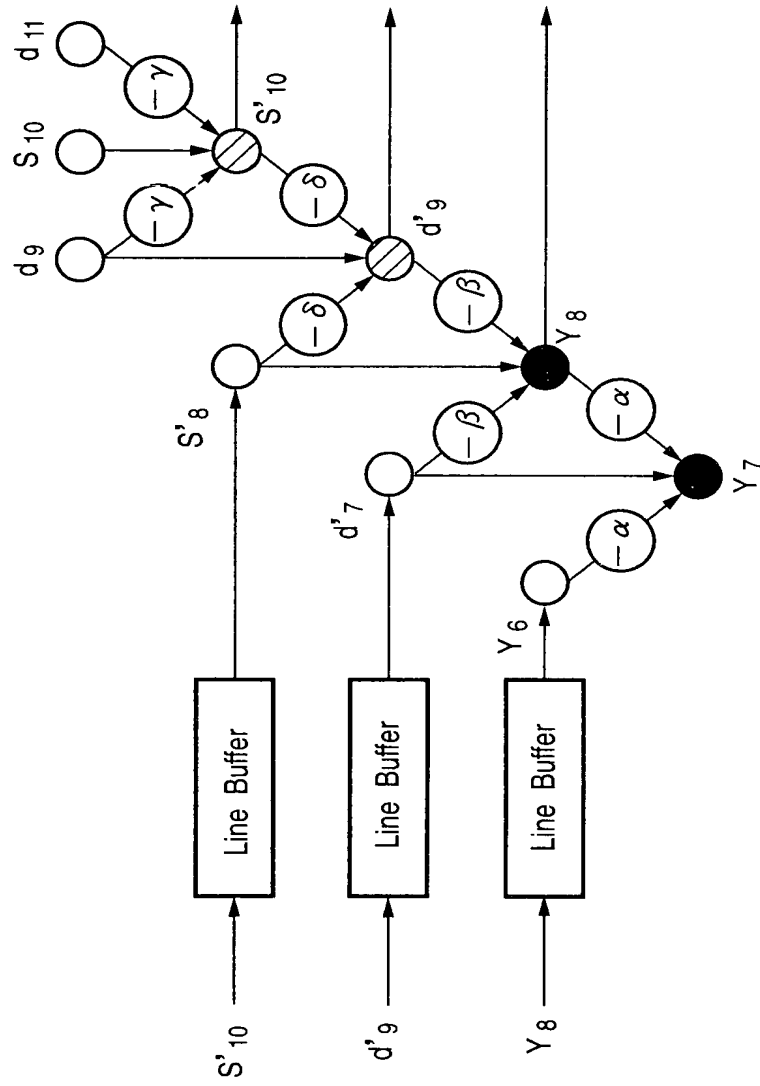
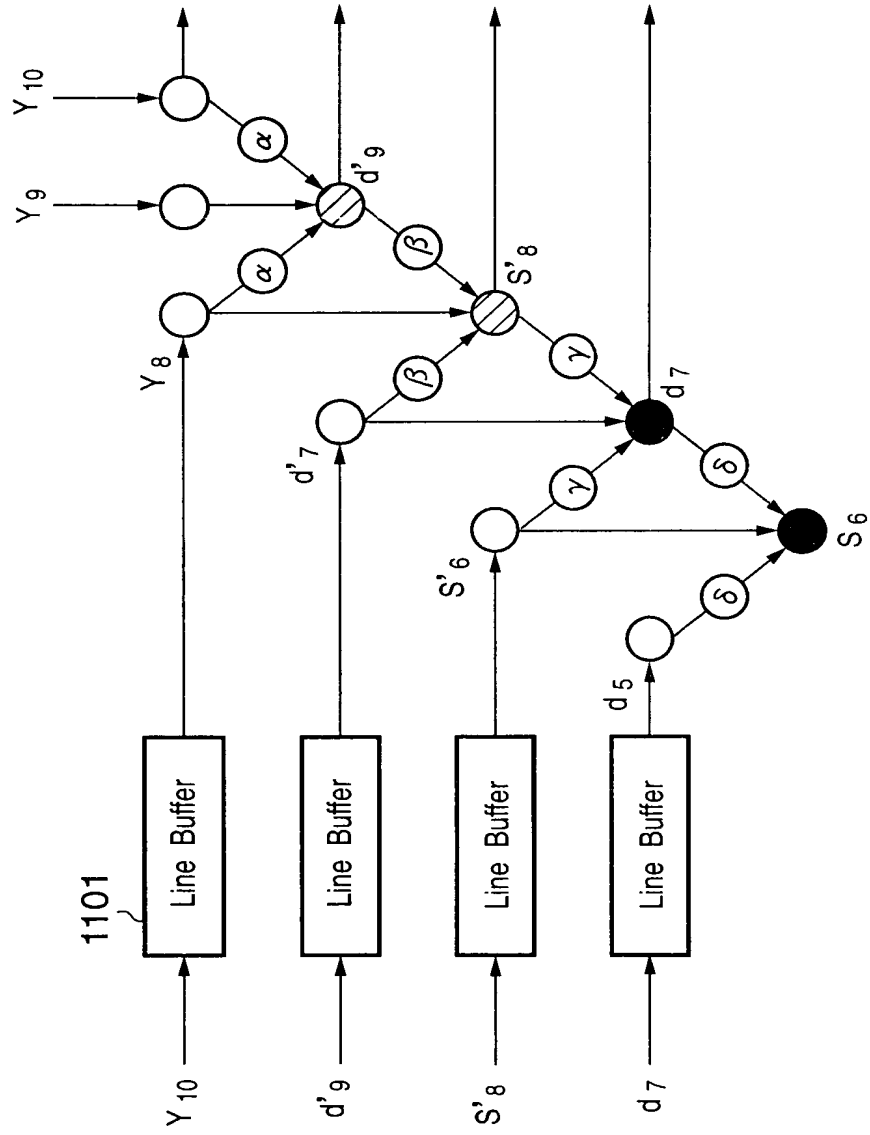
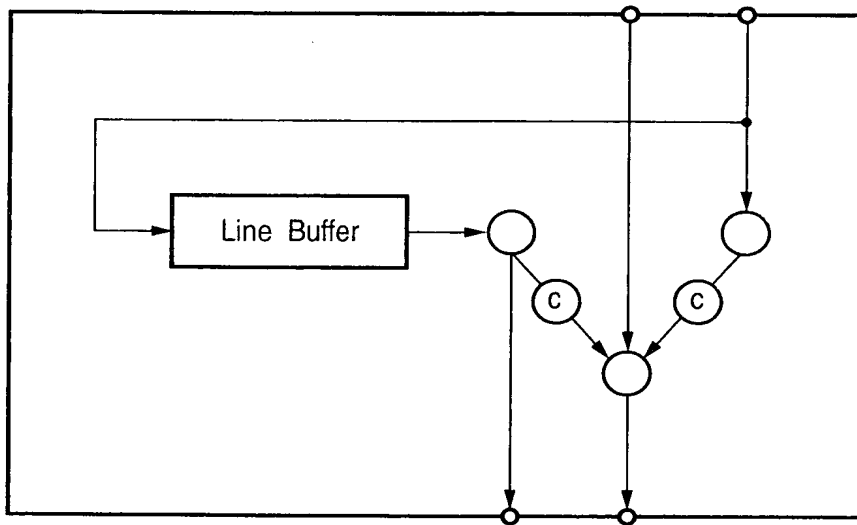


FIG. 11



**FIG. 12**



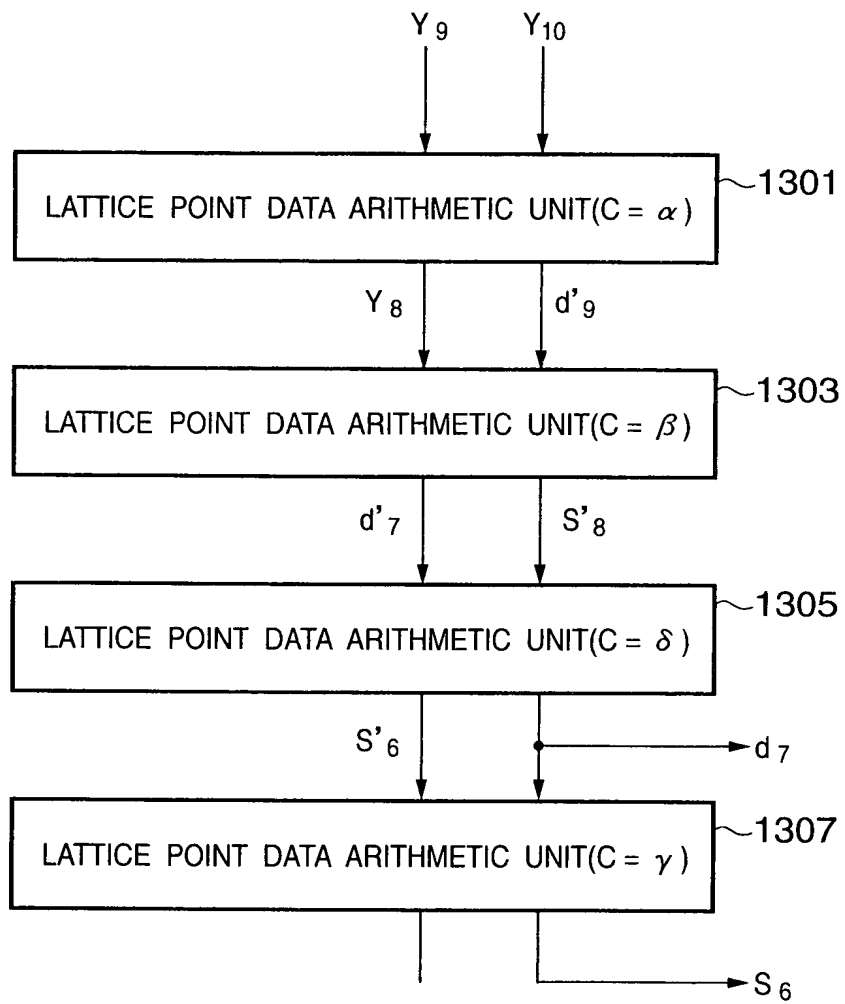
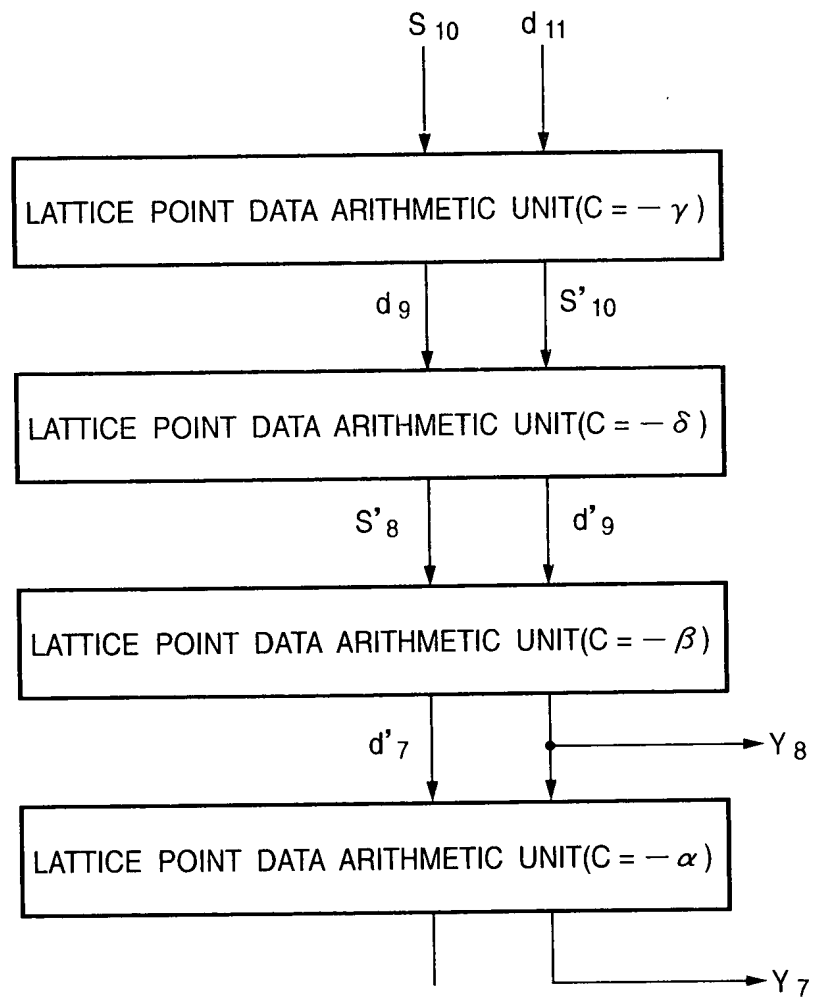
**FIG. 13**

FIG. 14



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FIG. 15

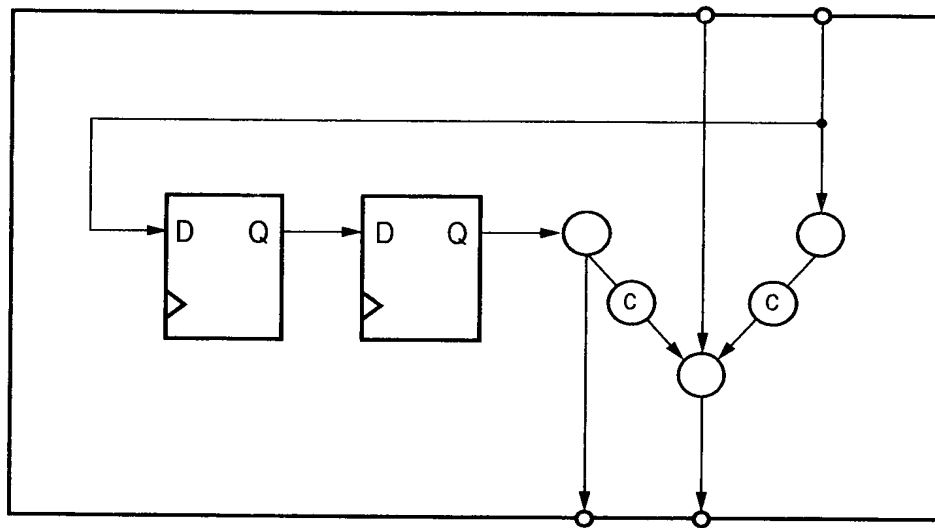


FIG. 16

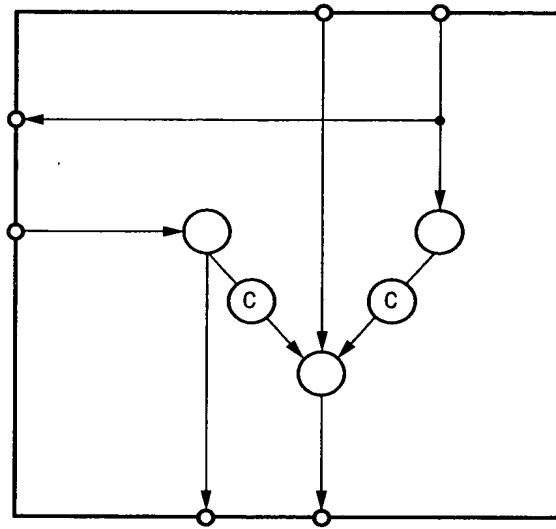


FIG. 17

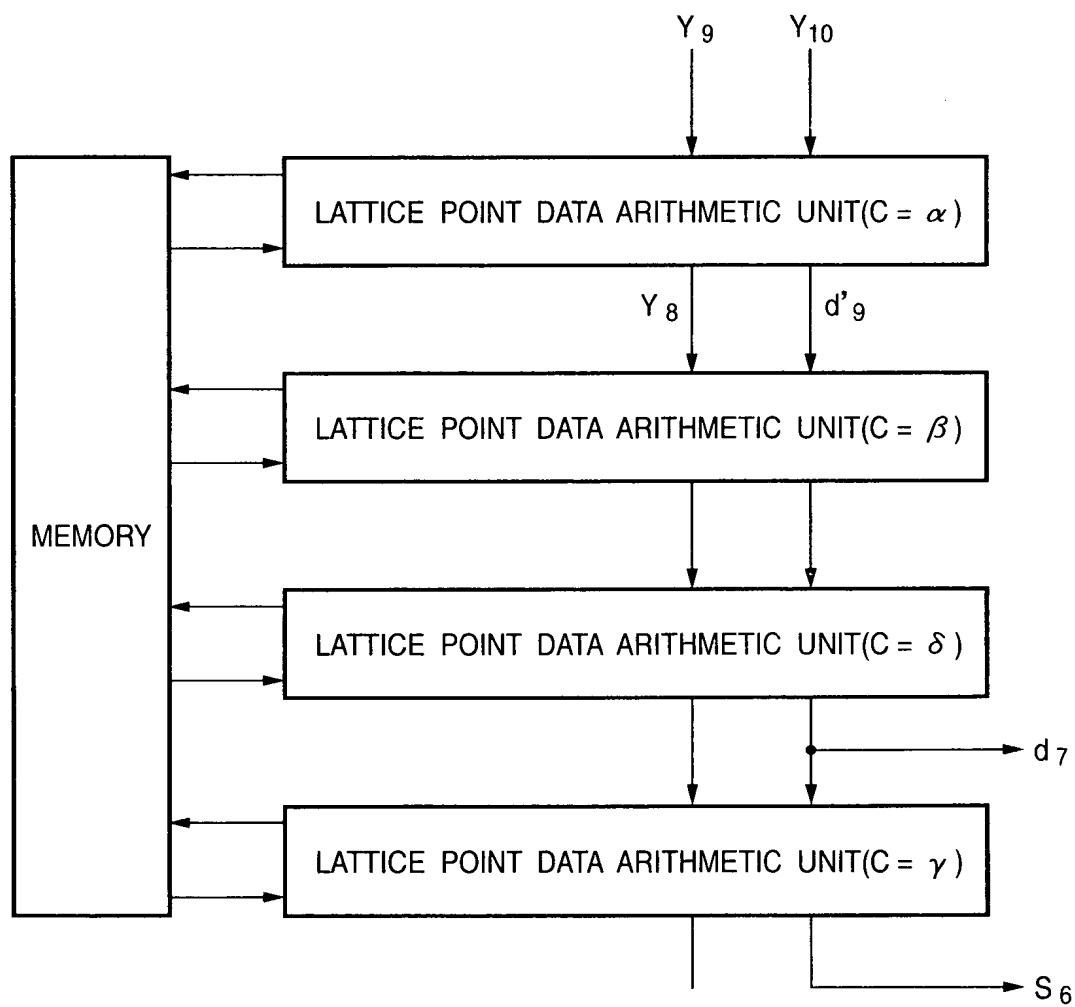
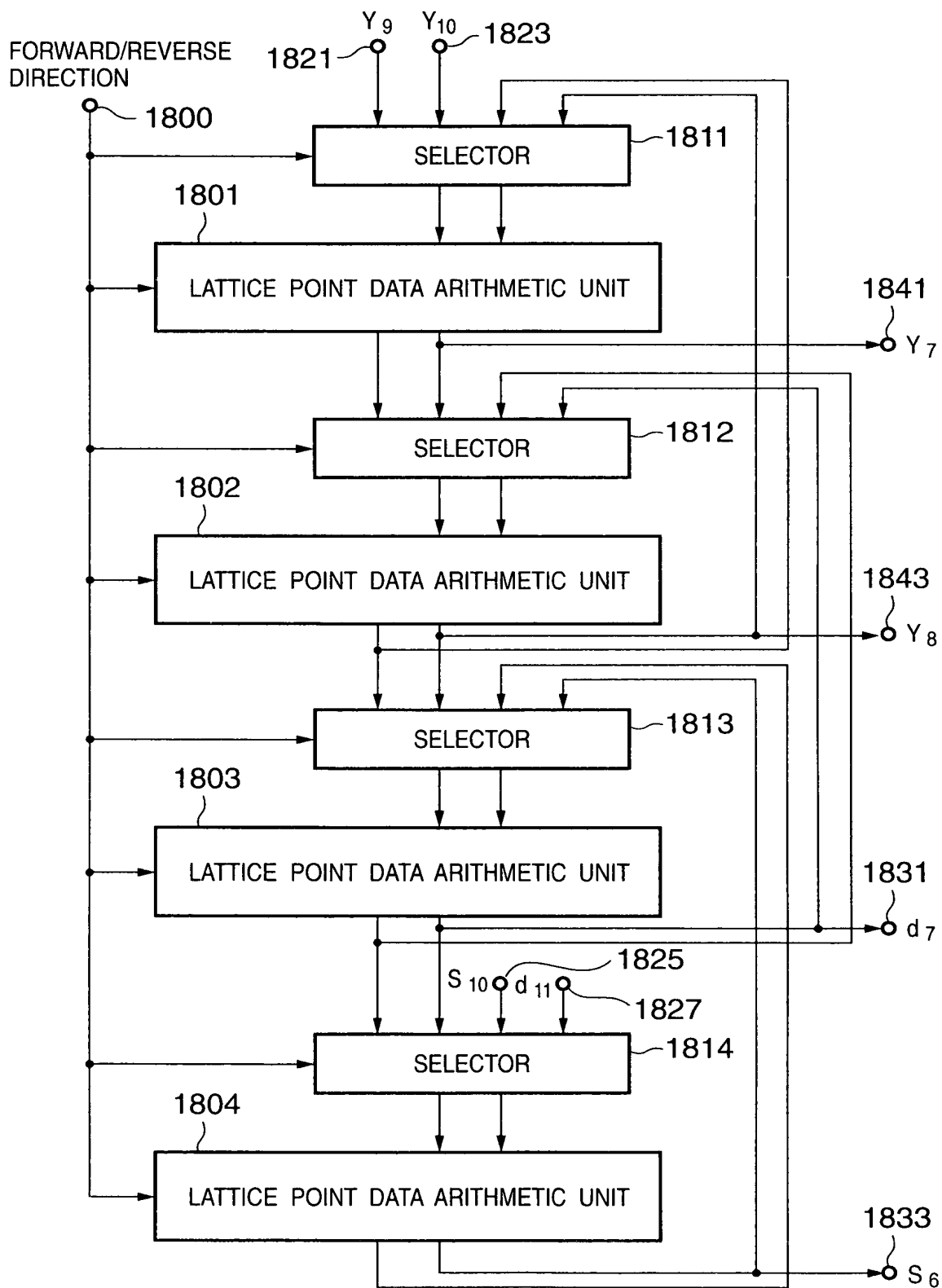
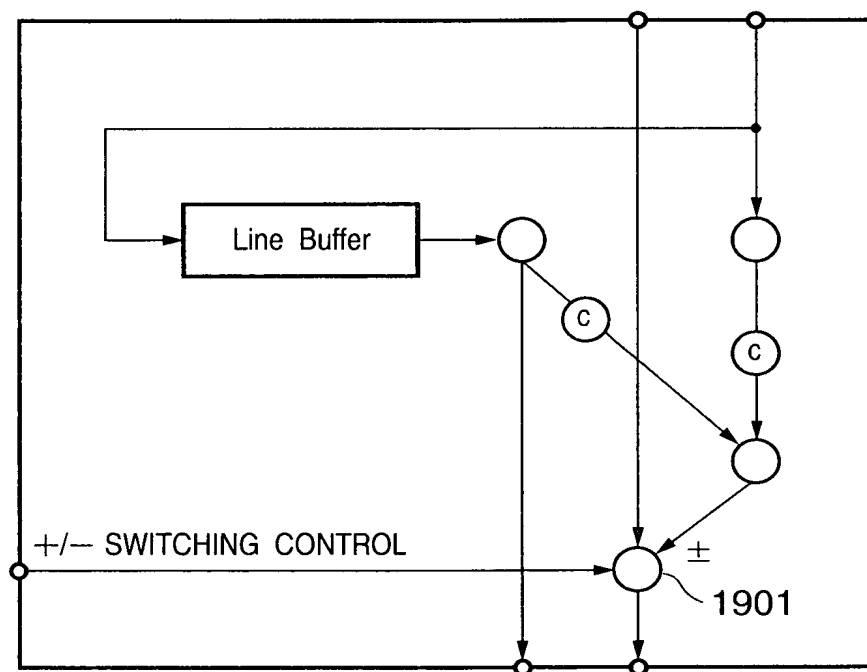


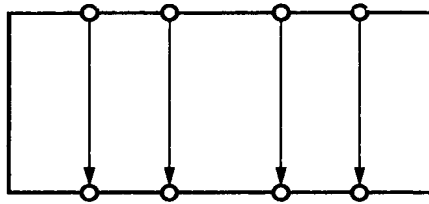
FIG. 18





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**F I G. 20A**



**F I G. 20B**

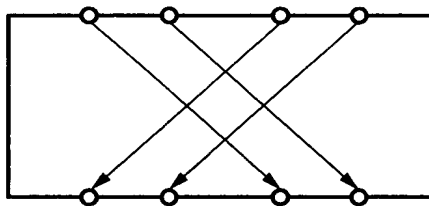


FIG. 21

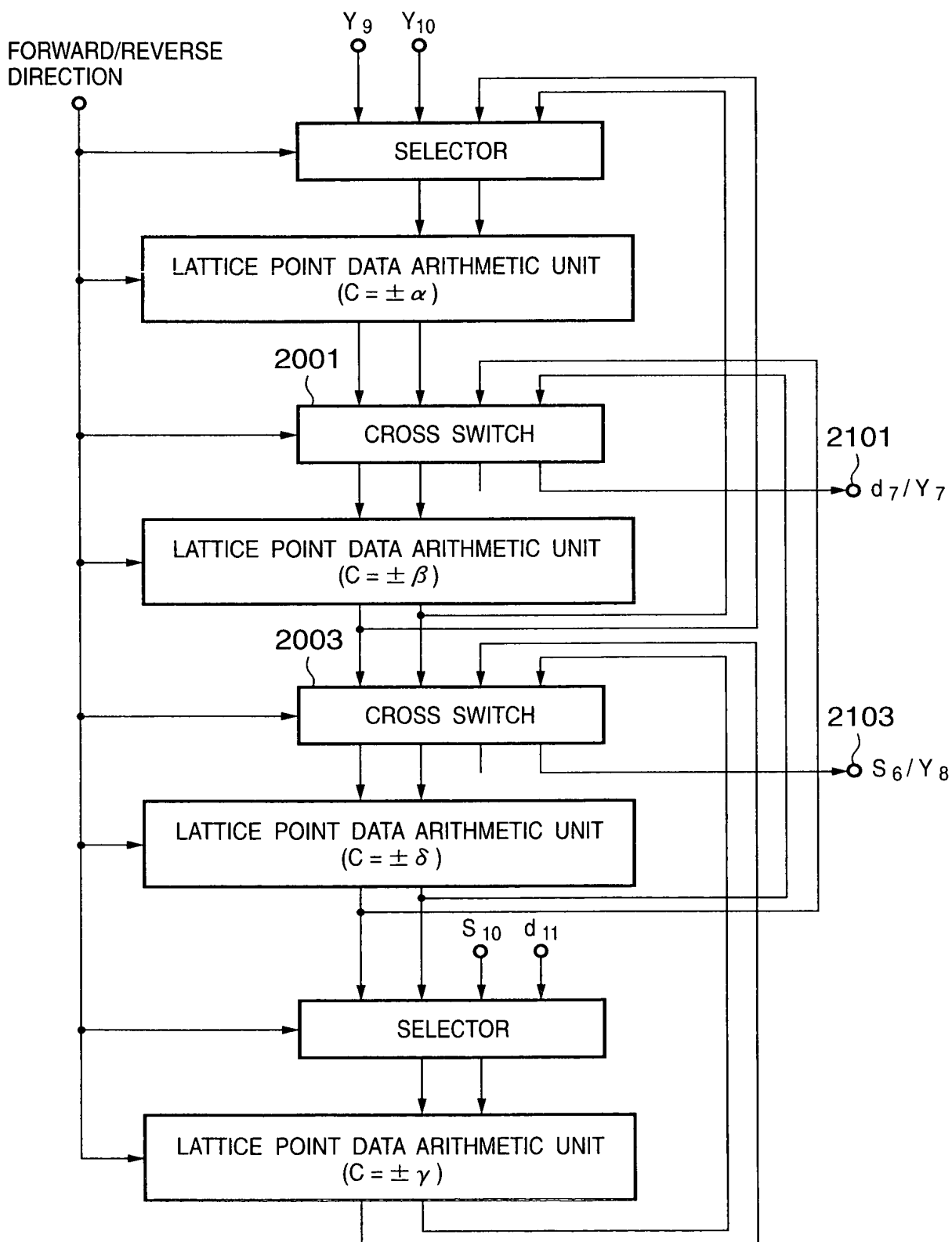
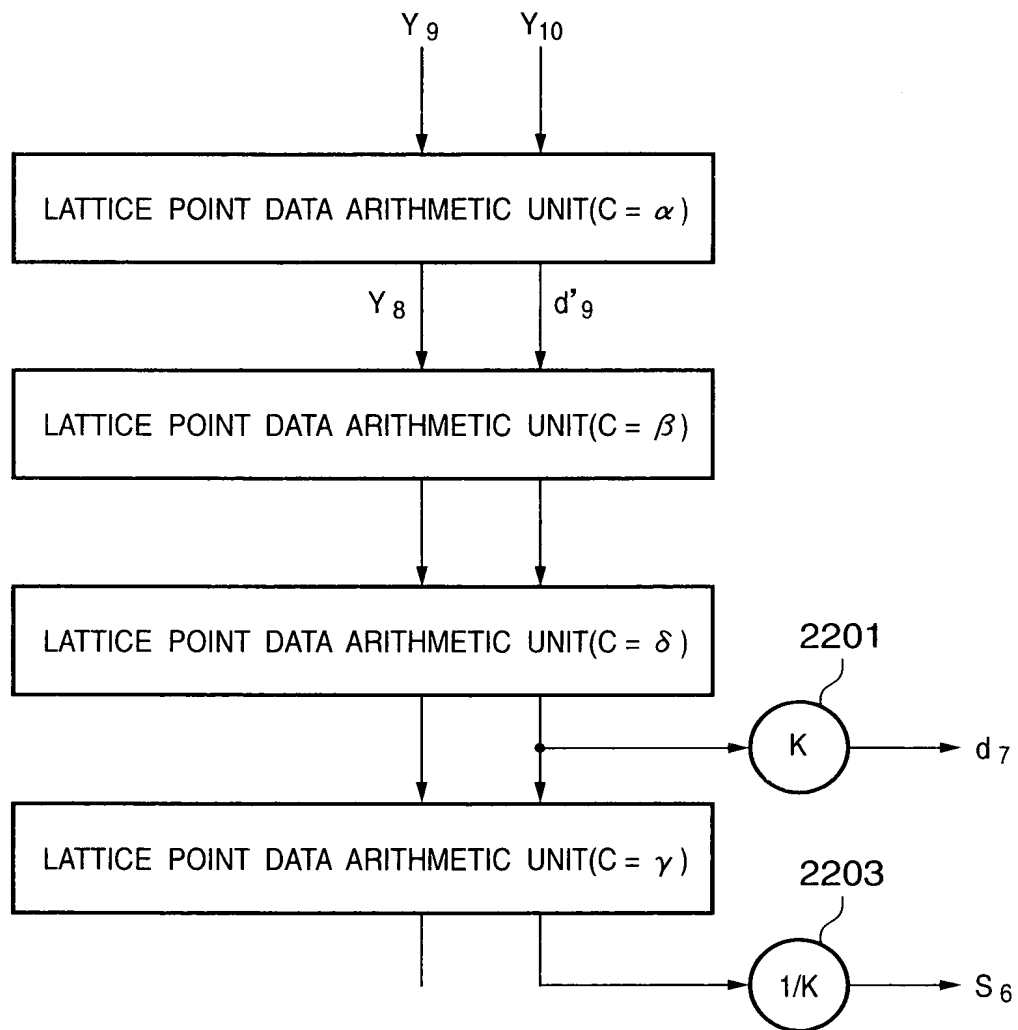


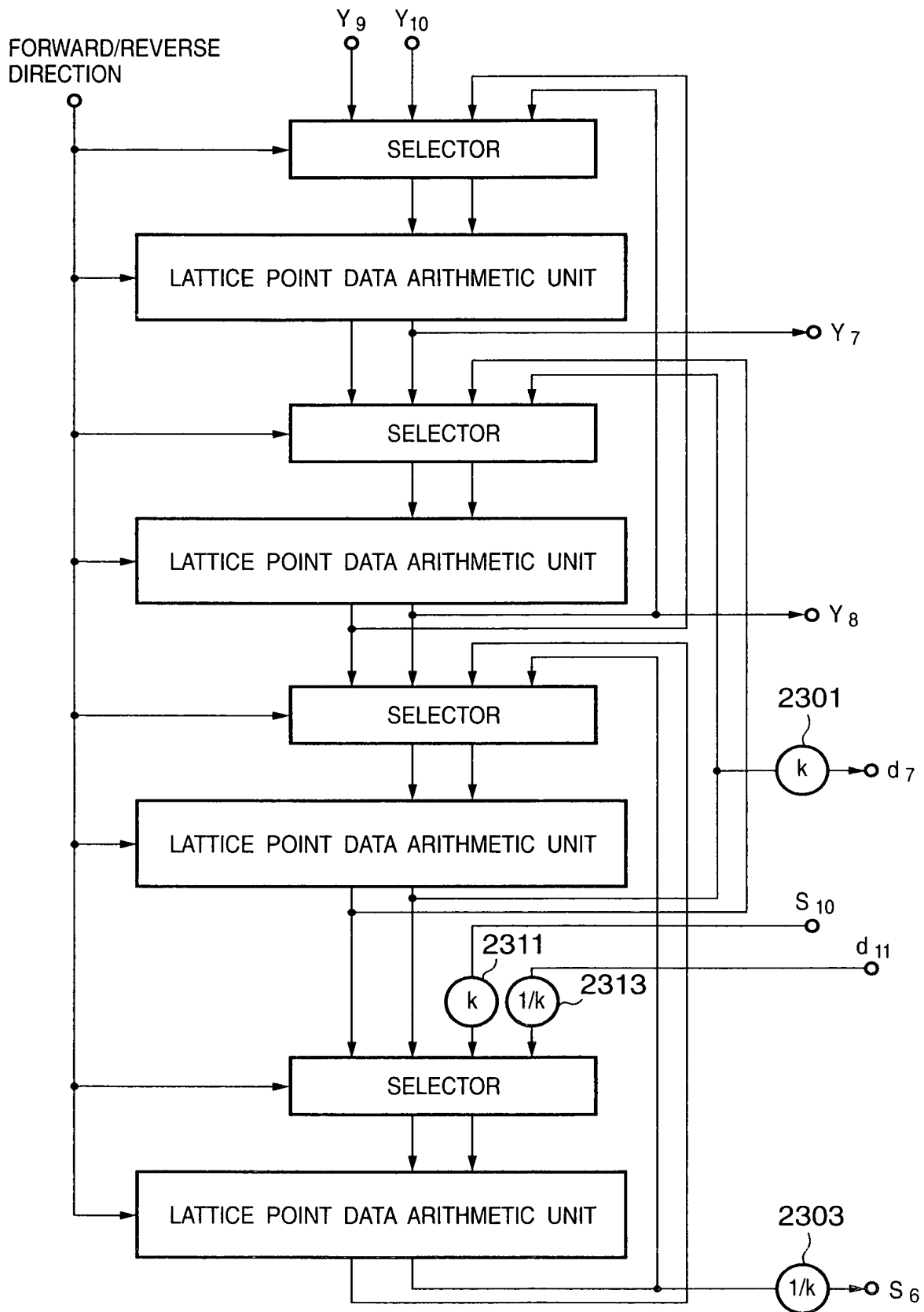
FIG. 22



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**FIG. 23**

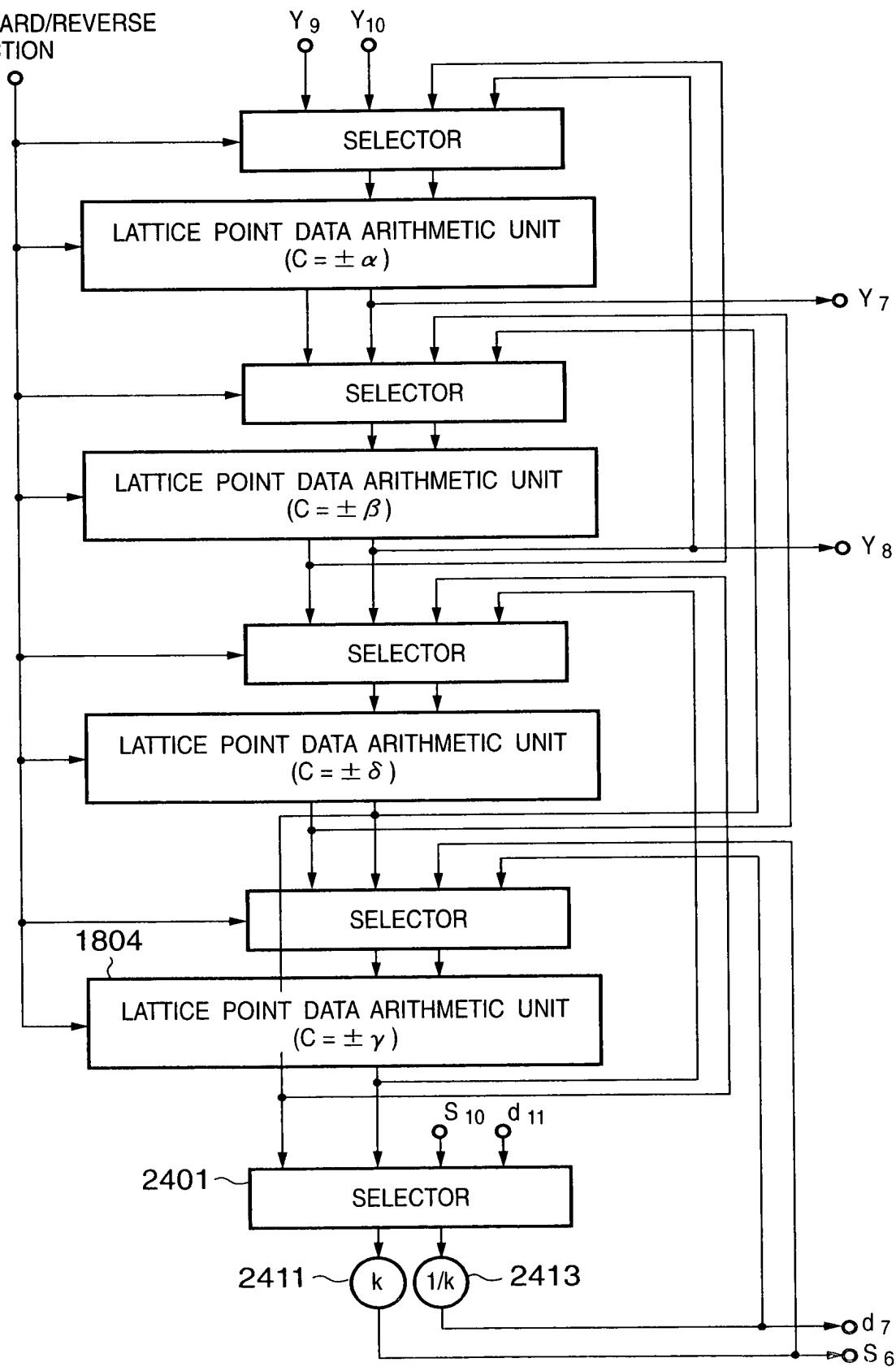


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**FIG. 24**

FORWARD/REVERSE  
DIRECTION



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FIG. 25

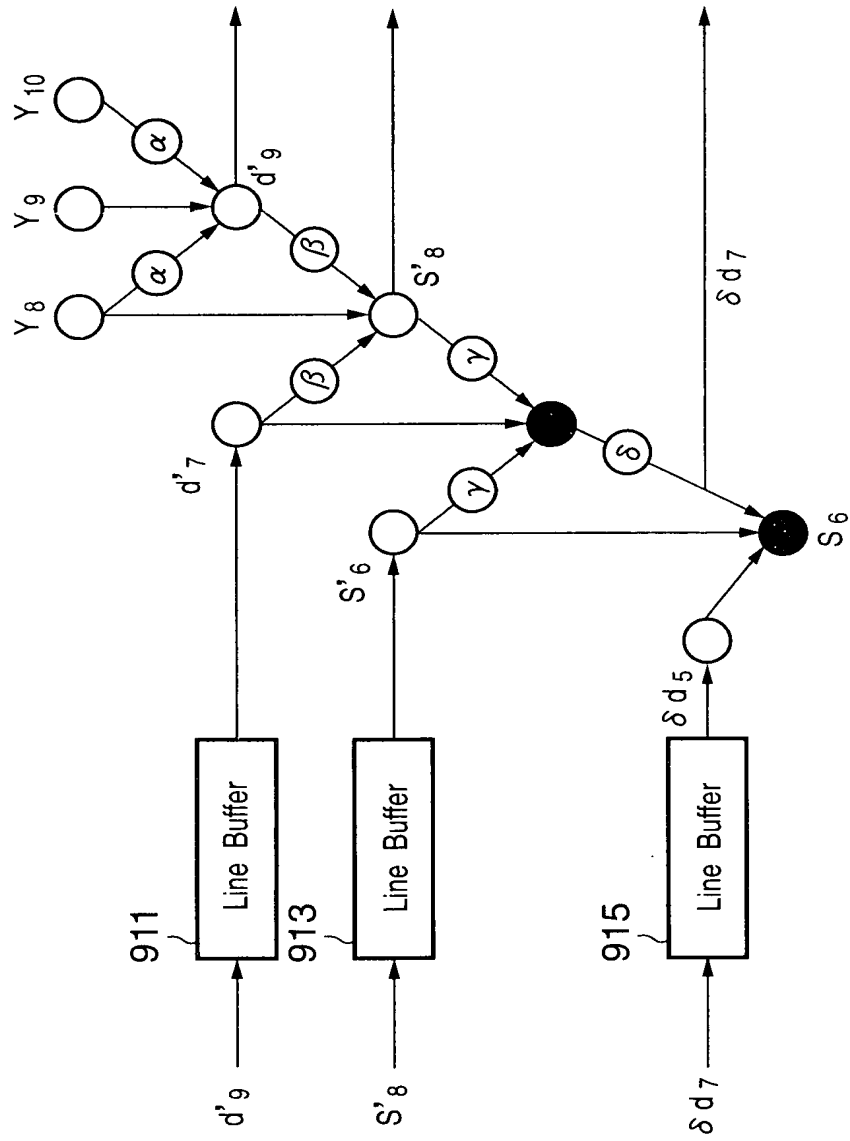


FIG. 26

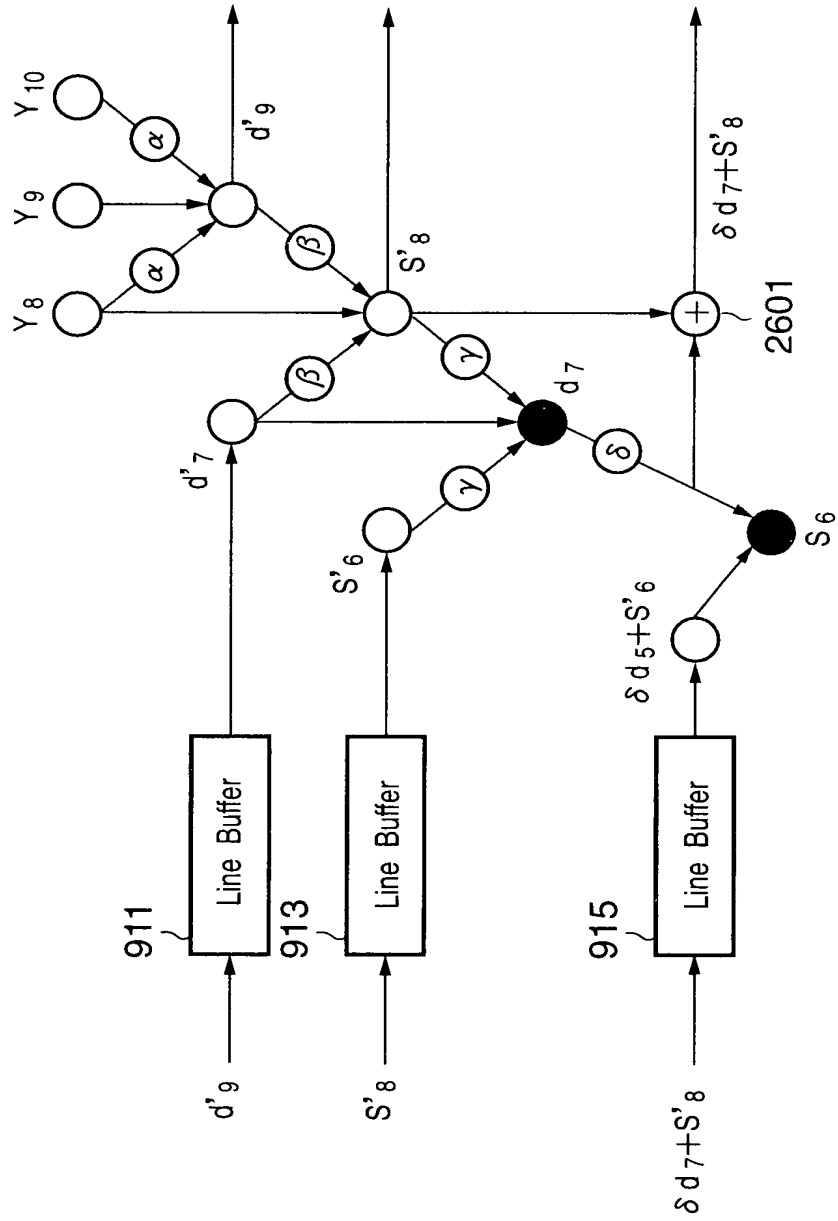
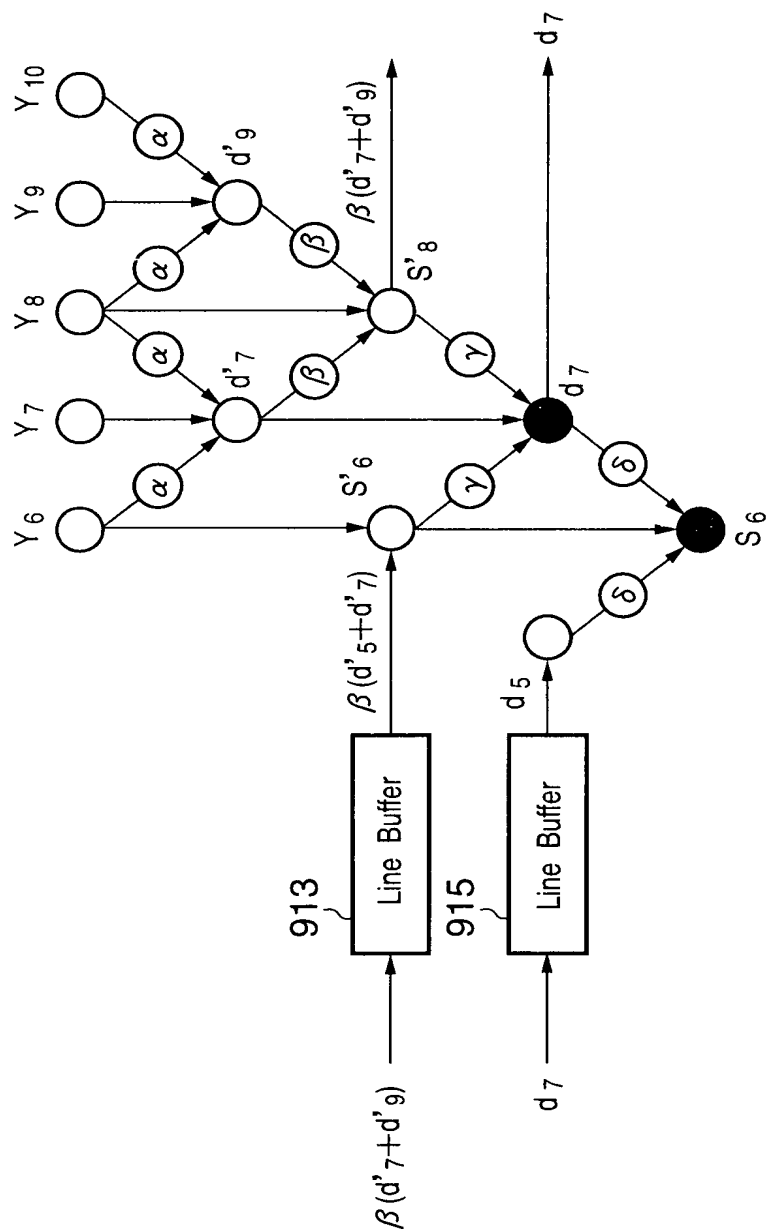
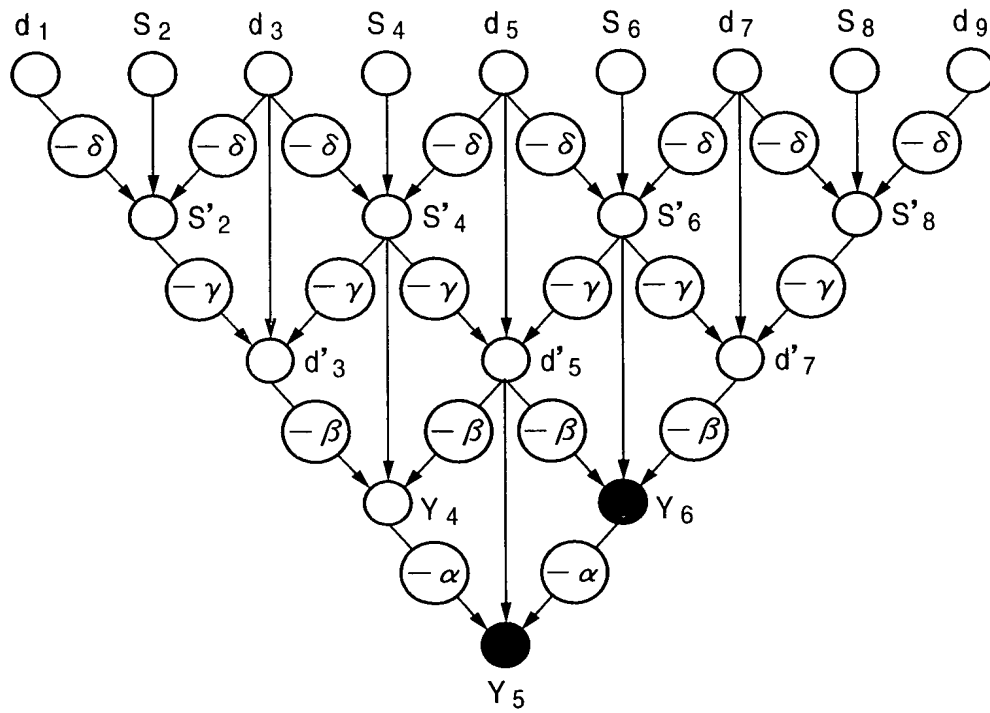


FIG. 27



**FIG. 28**

## FIG. 29

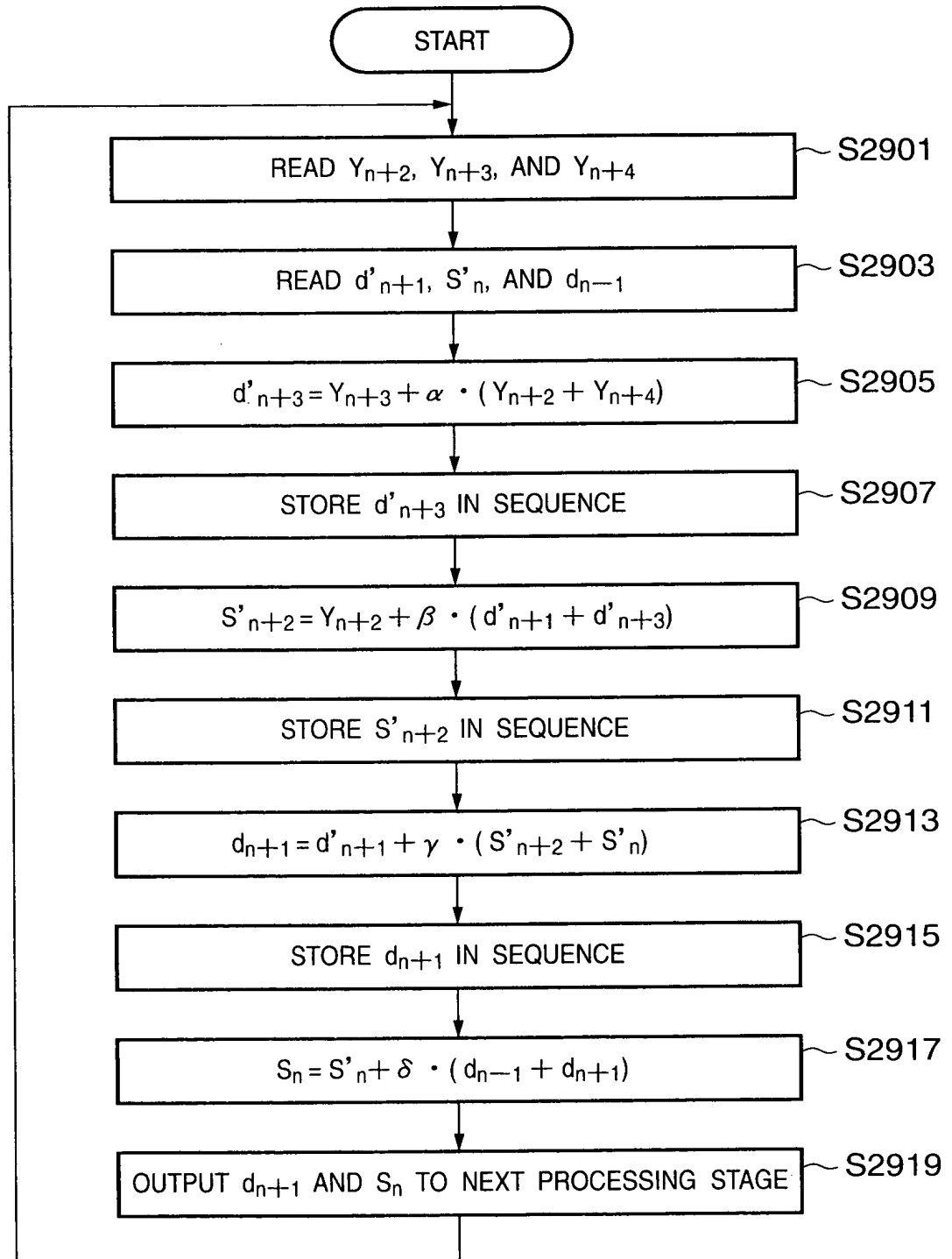


FIG. 30

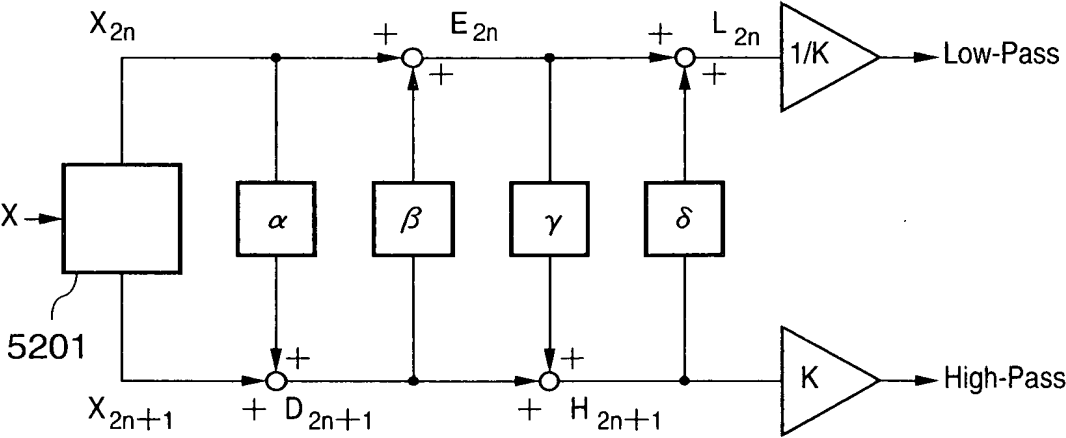
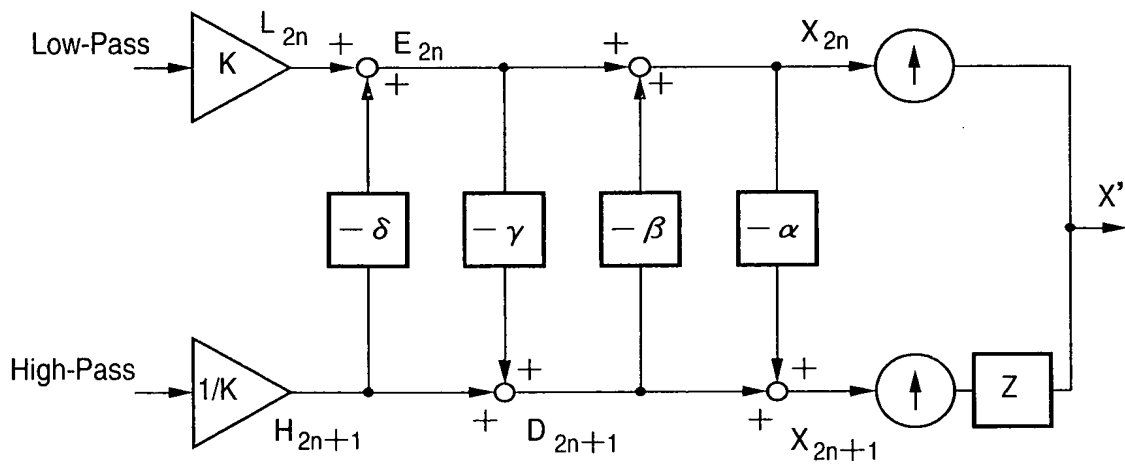


FIG. 31



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FIG. 32

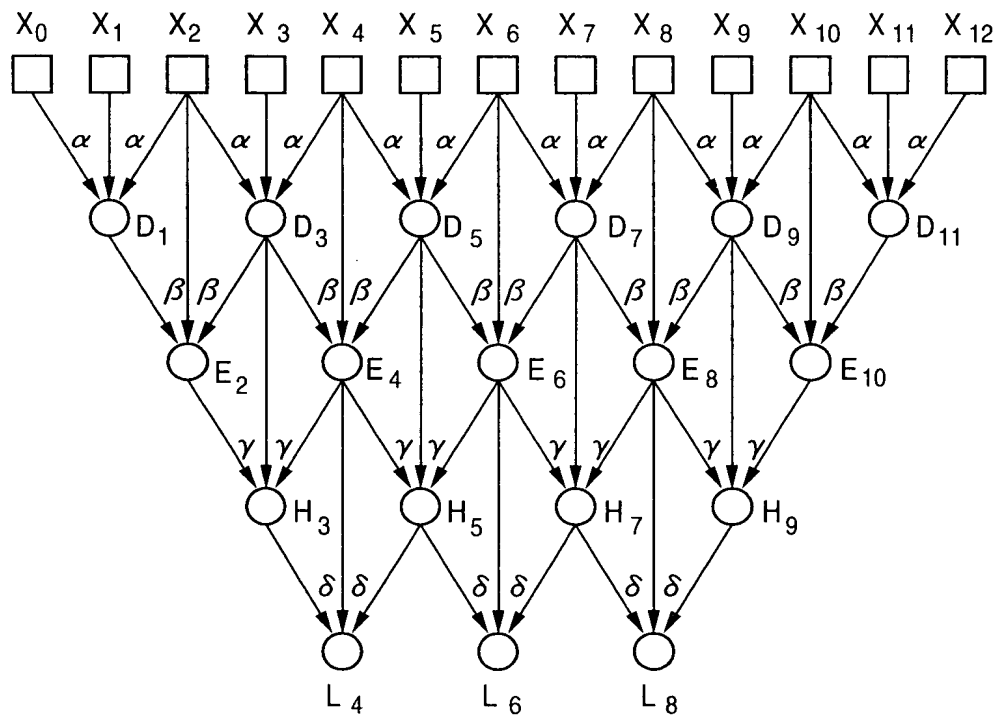


FIG. 33

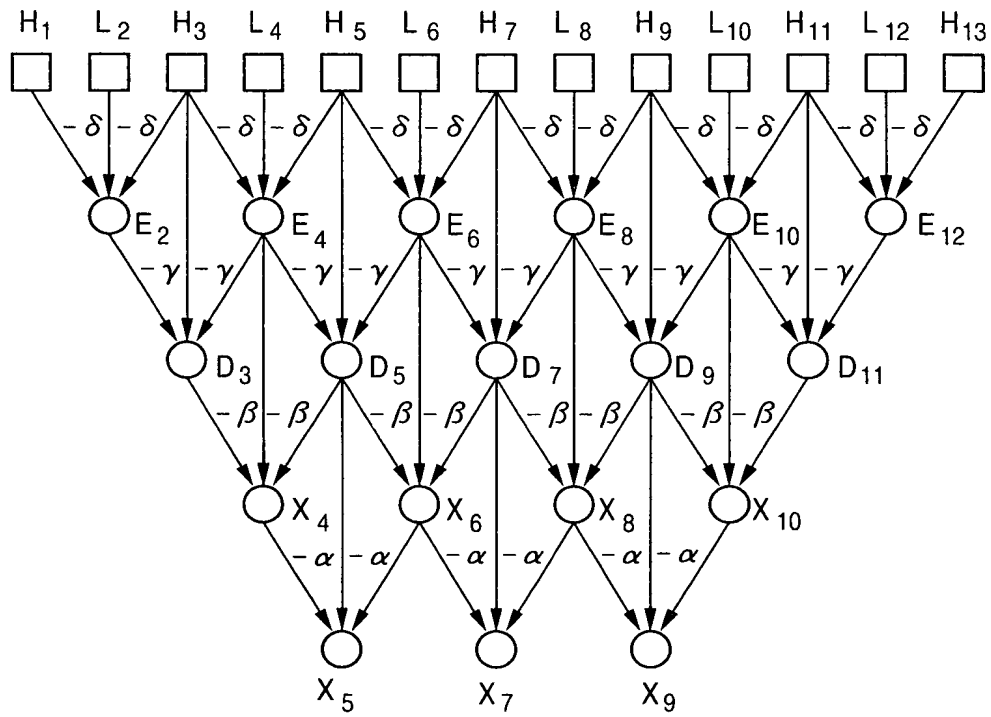


FIG. 34

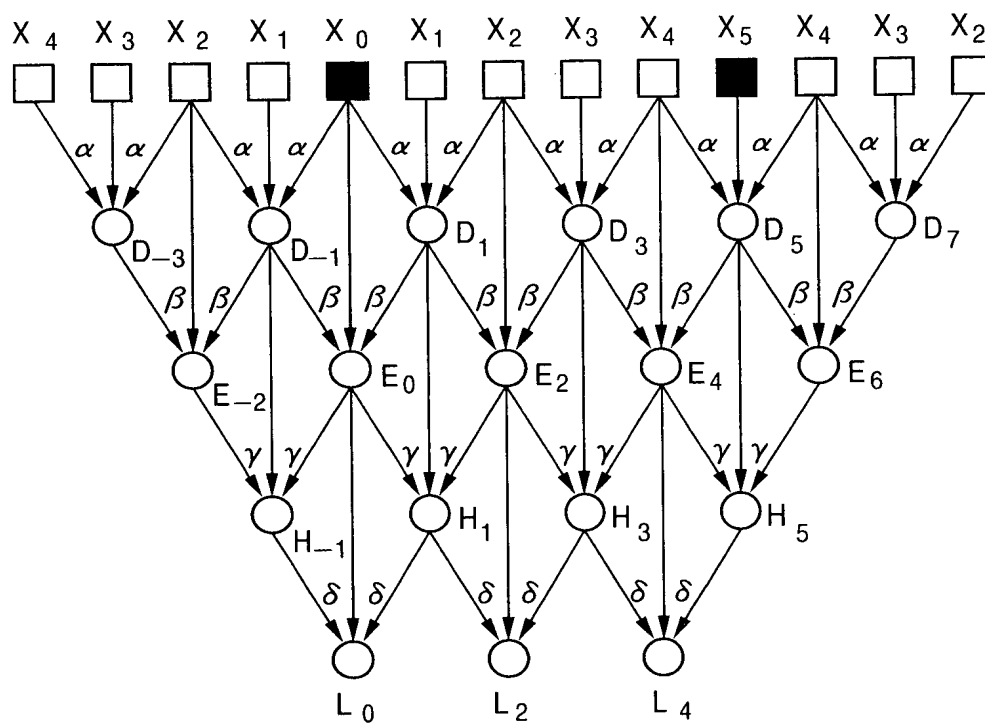
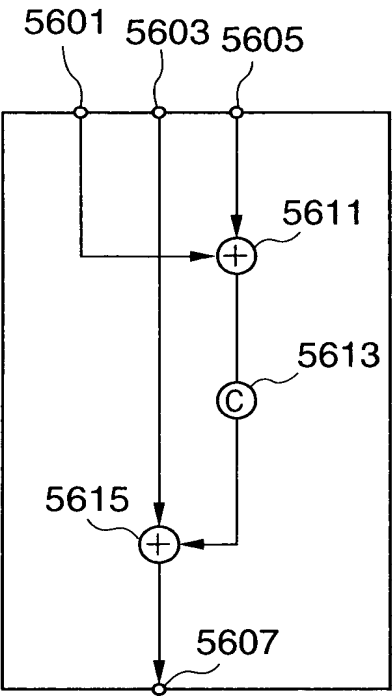


FIG. 35



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FIG. 36

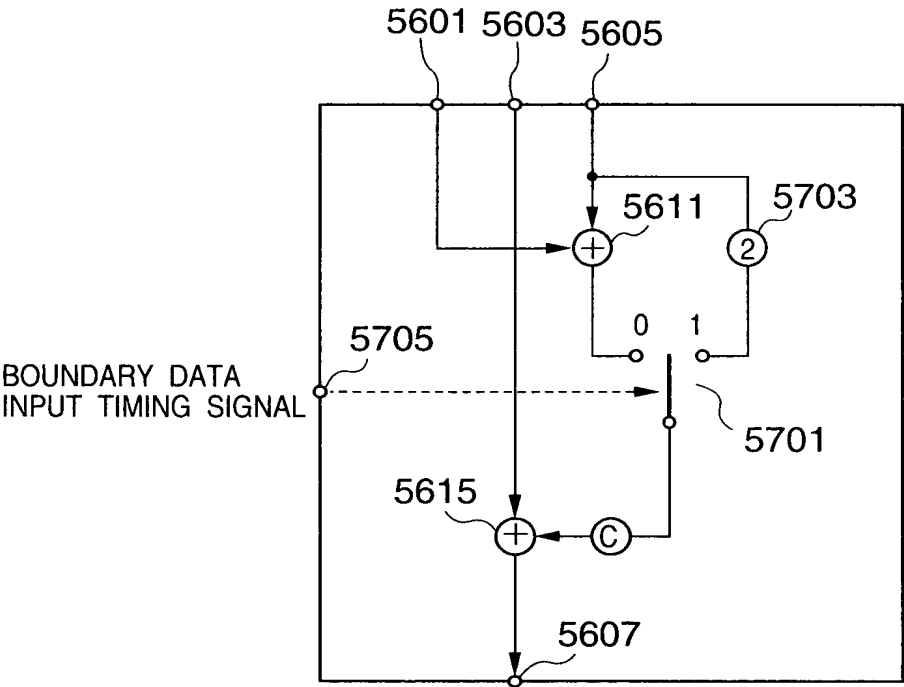


FIG. 37

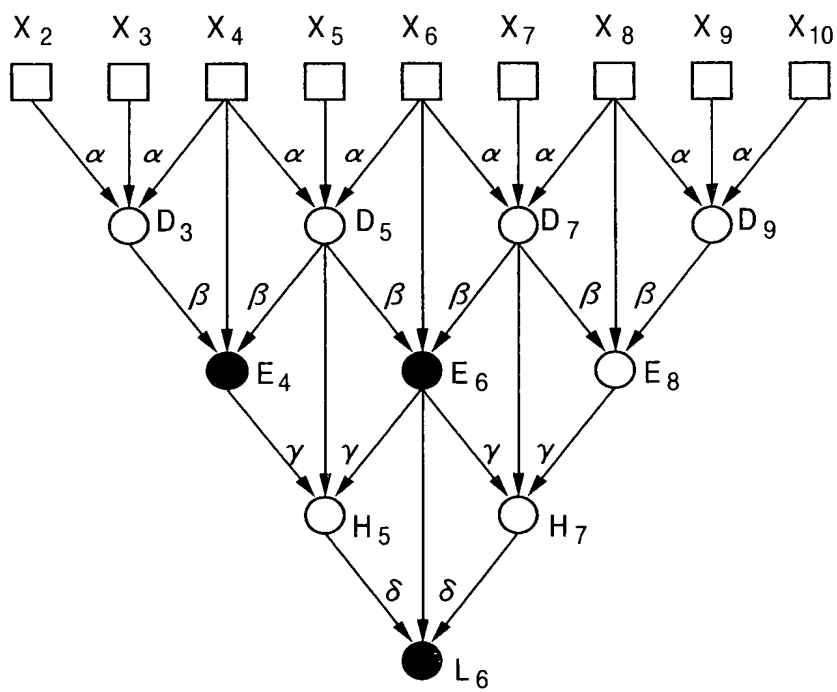


FIG. 38

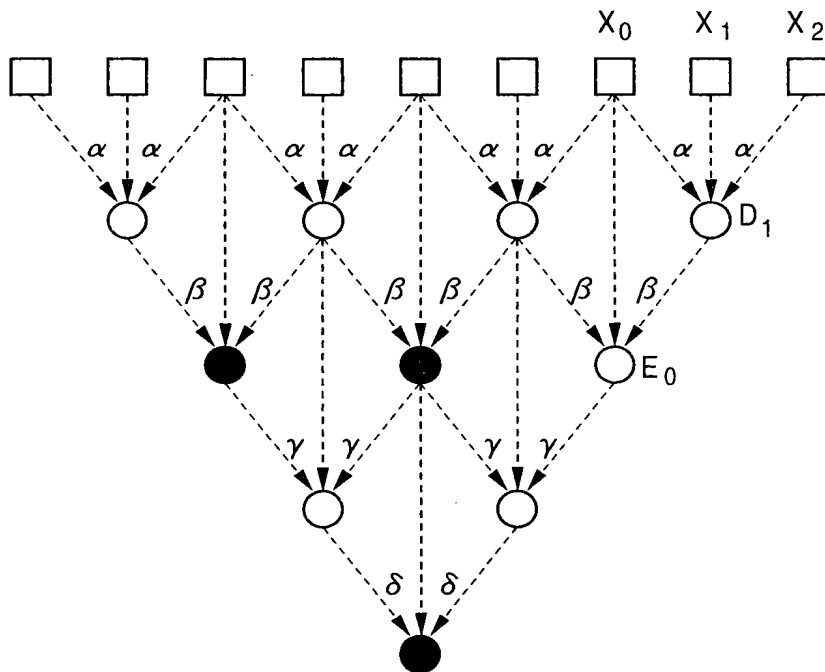
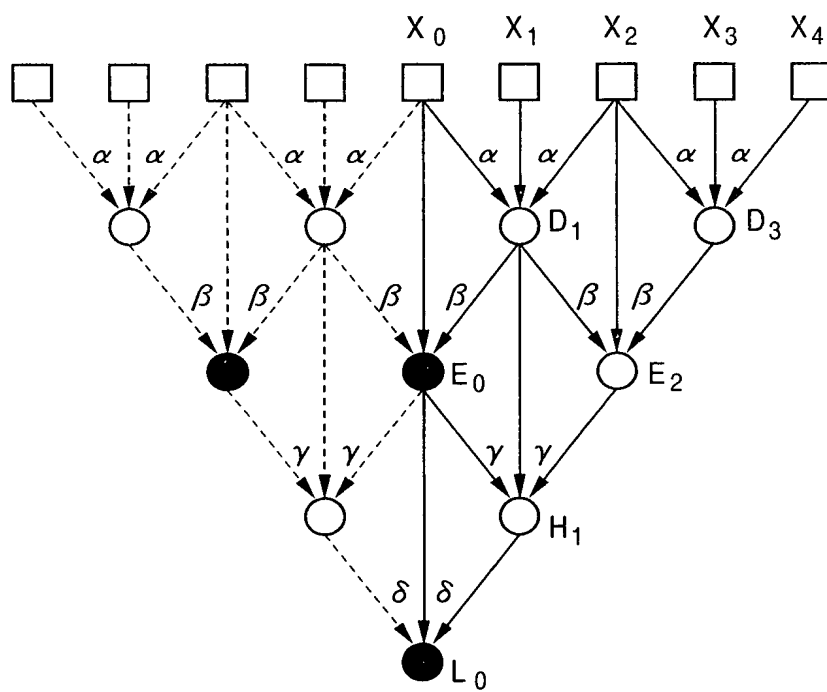


FIG. 39



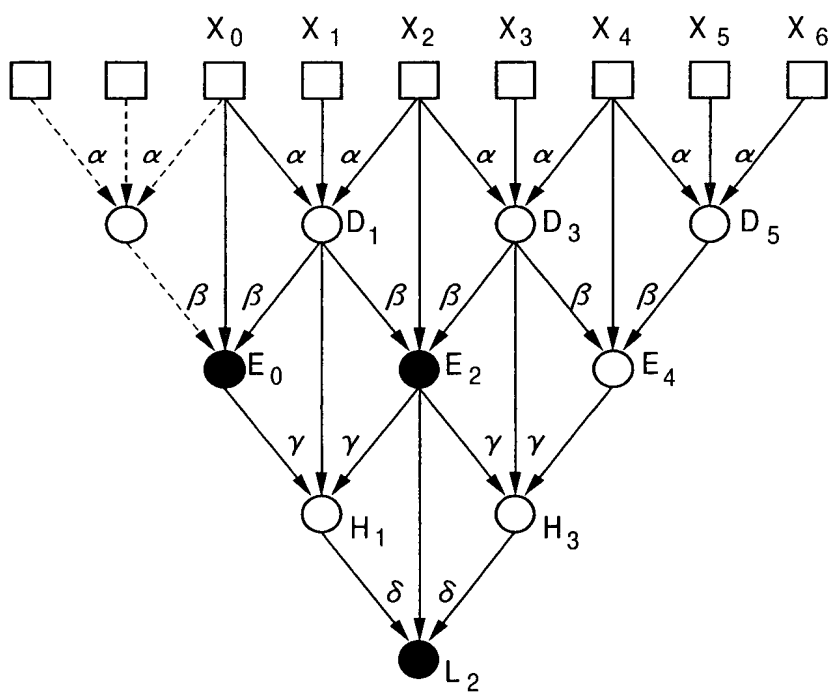
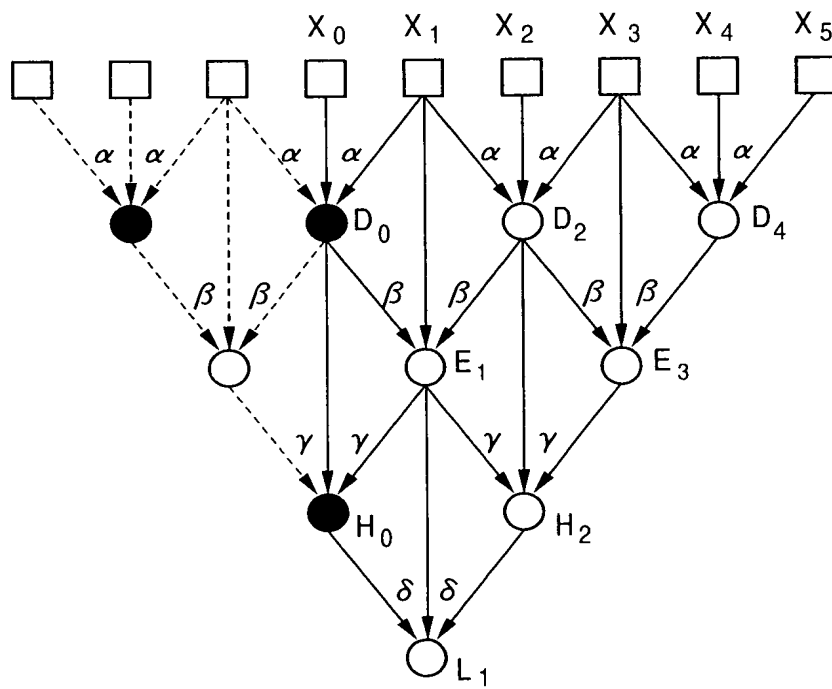
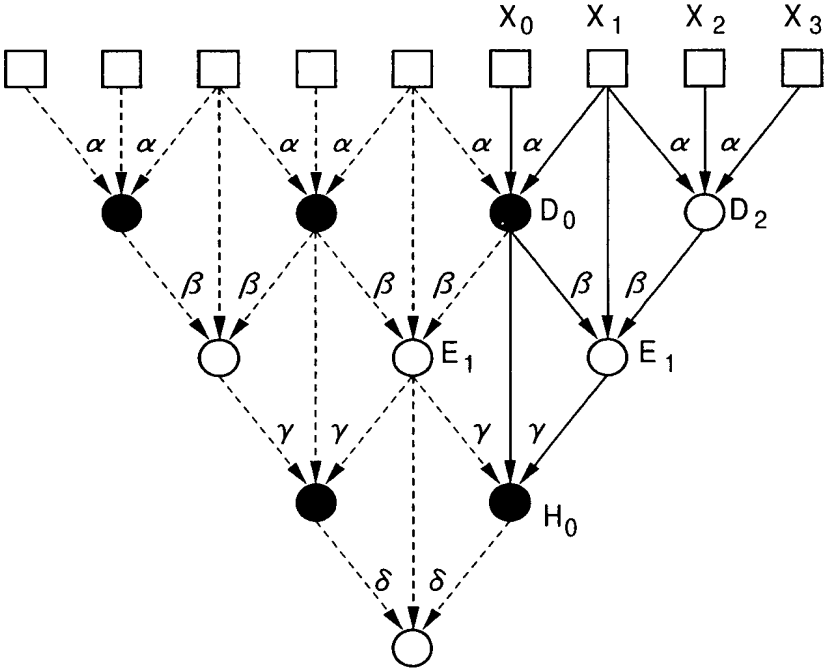
**FIG. 40**

FIG. 41



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FIG. 42



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FIG. 43

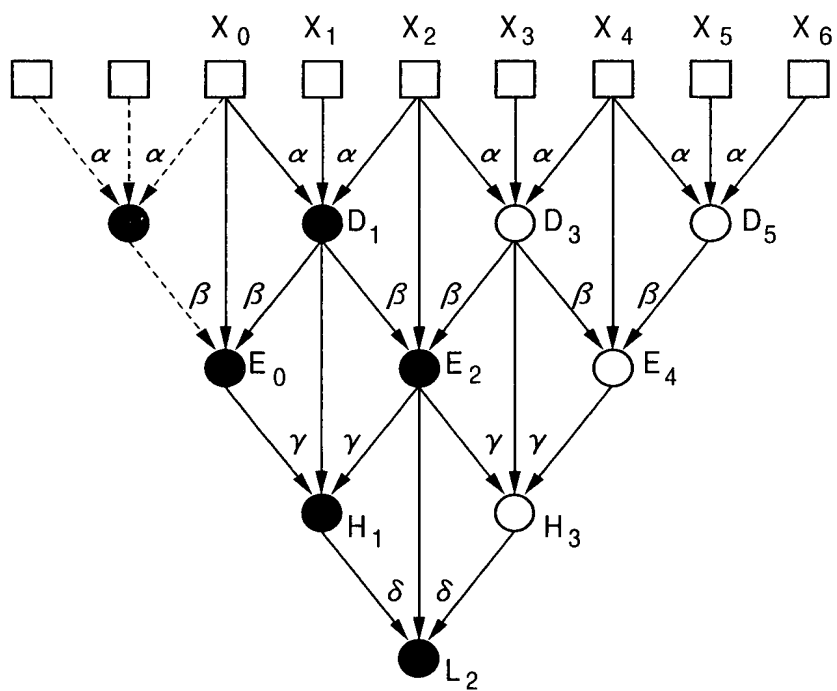
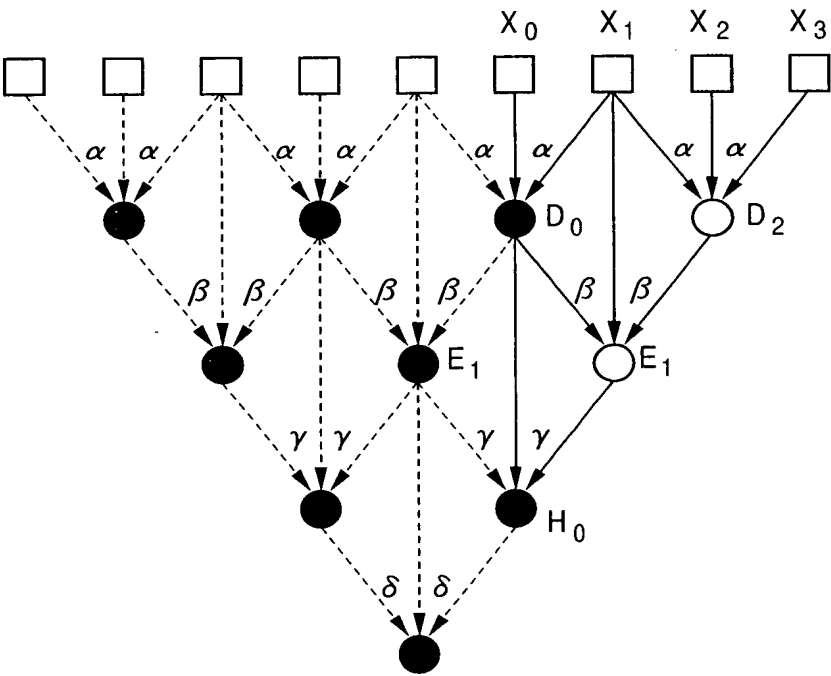


FIG. 44



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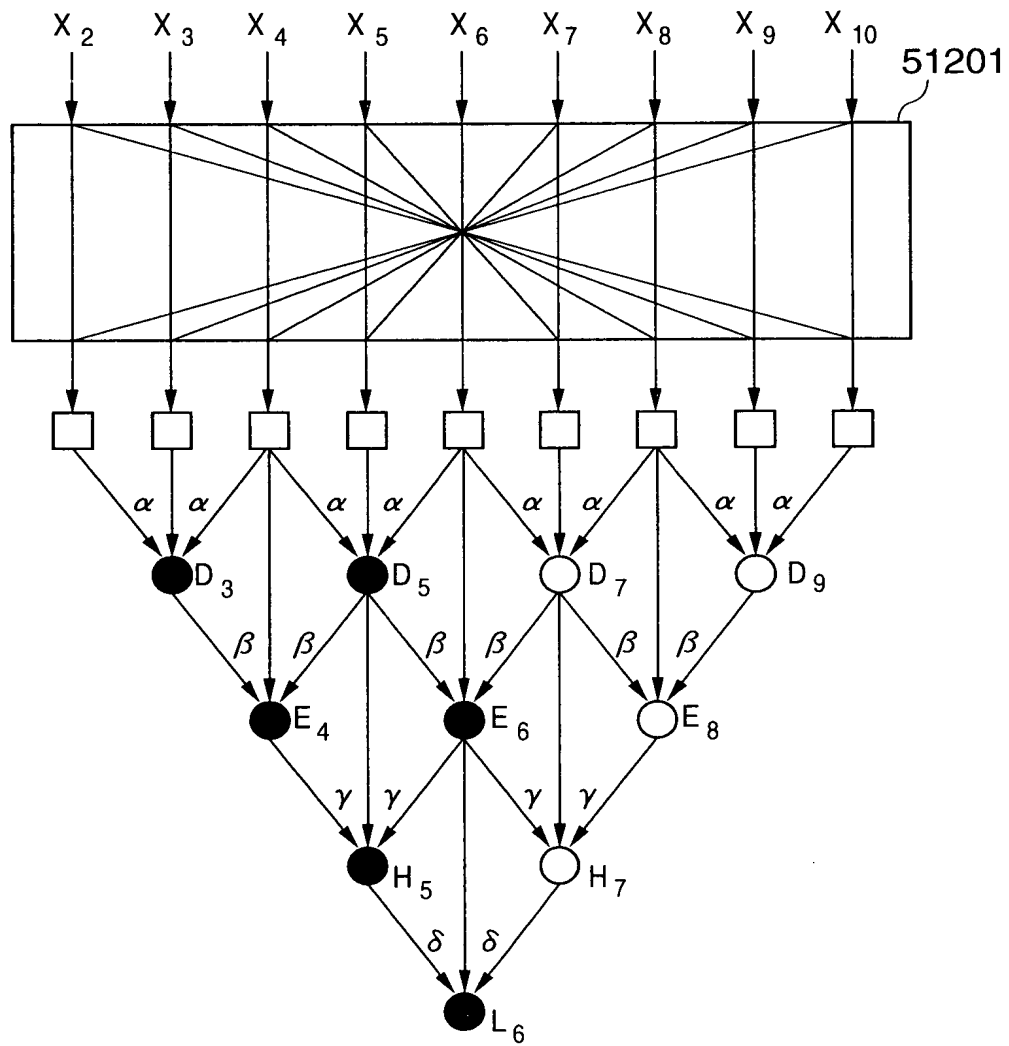
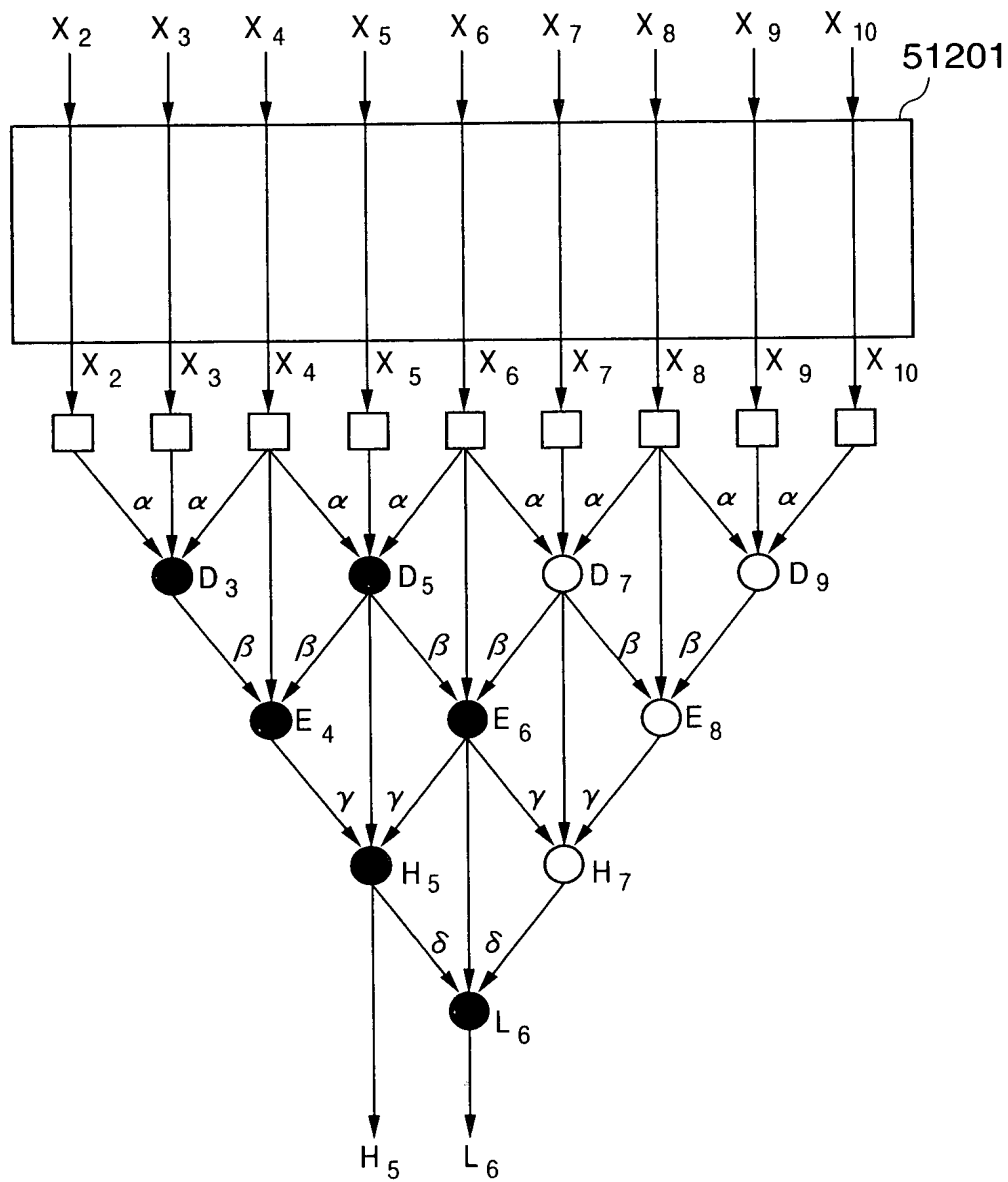
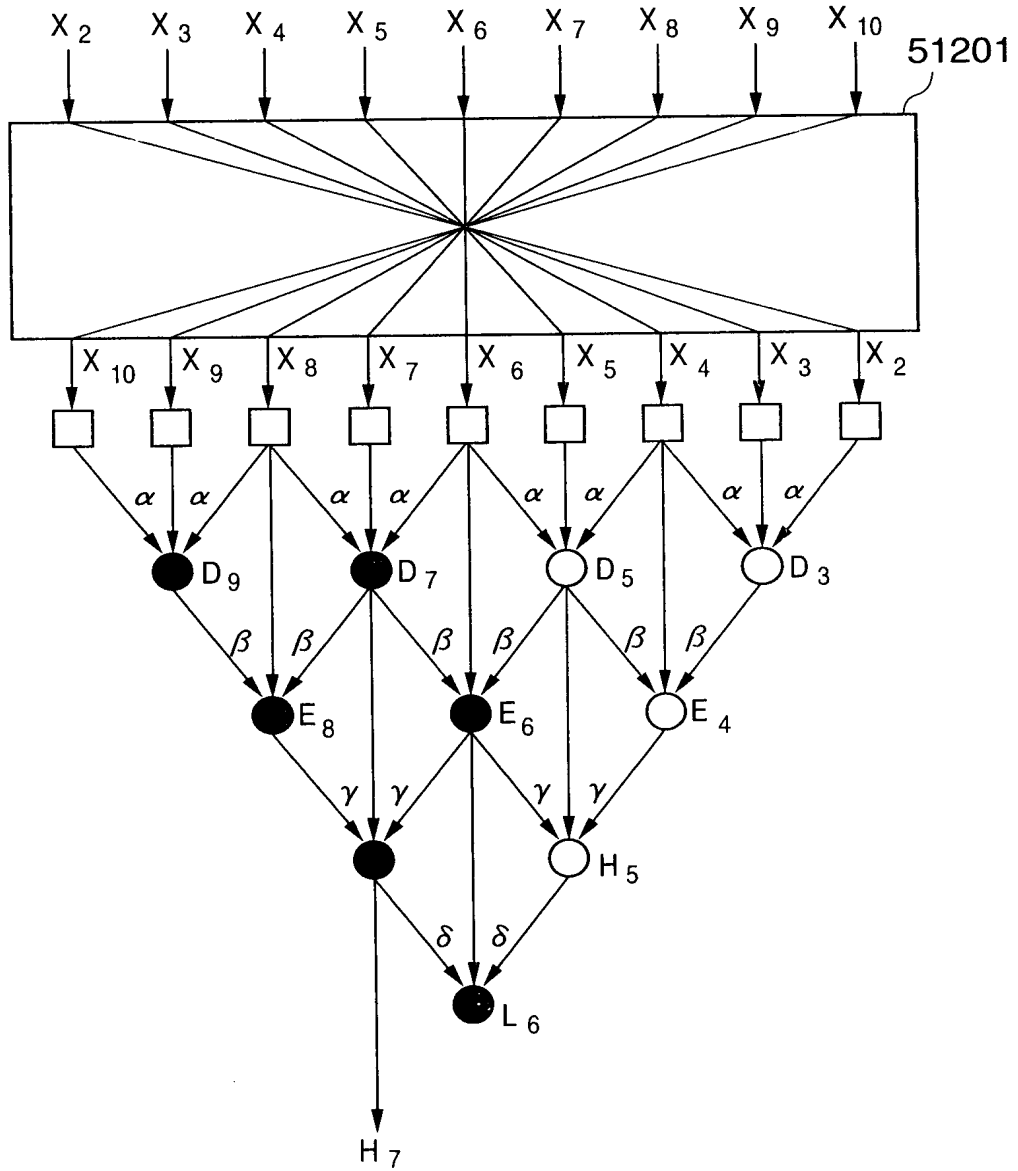
**FIG. 45**

FIG. 46



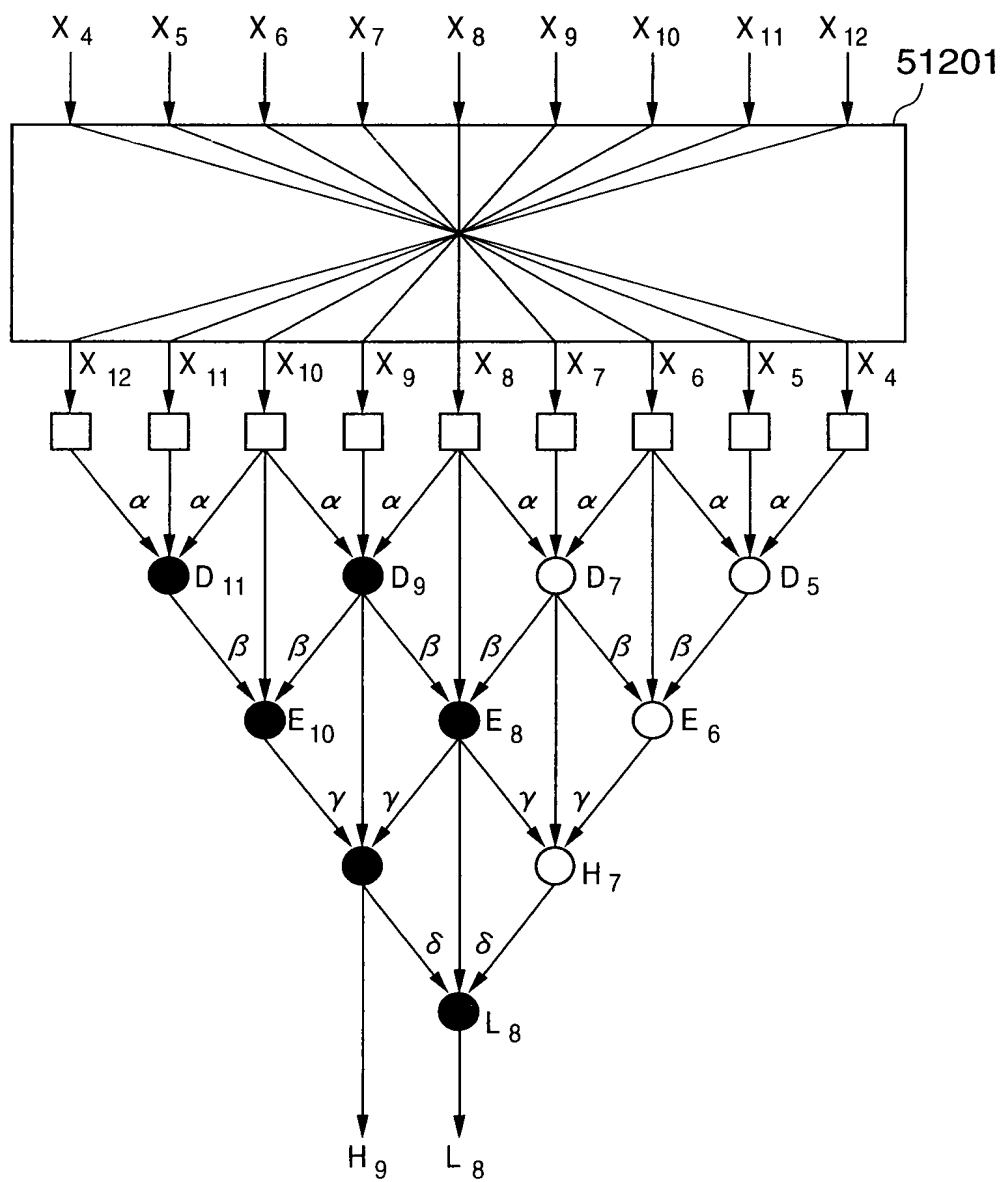
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FIG. 47



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FIG. 48



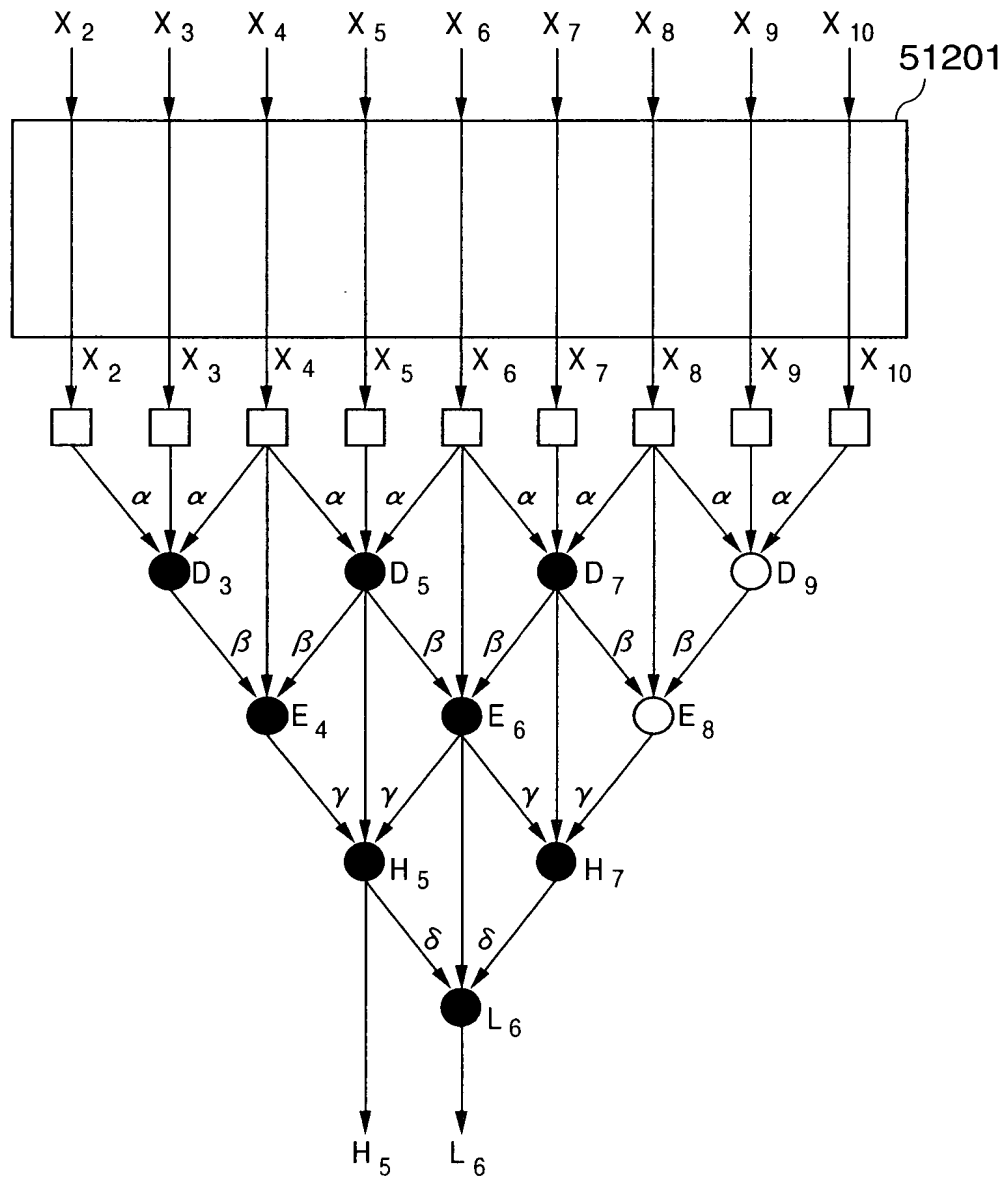
**FIG. 49**

FIG. 50

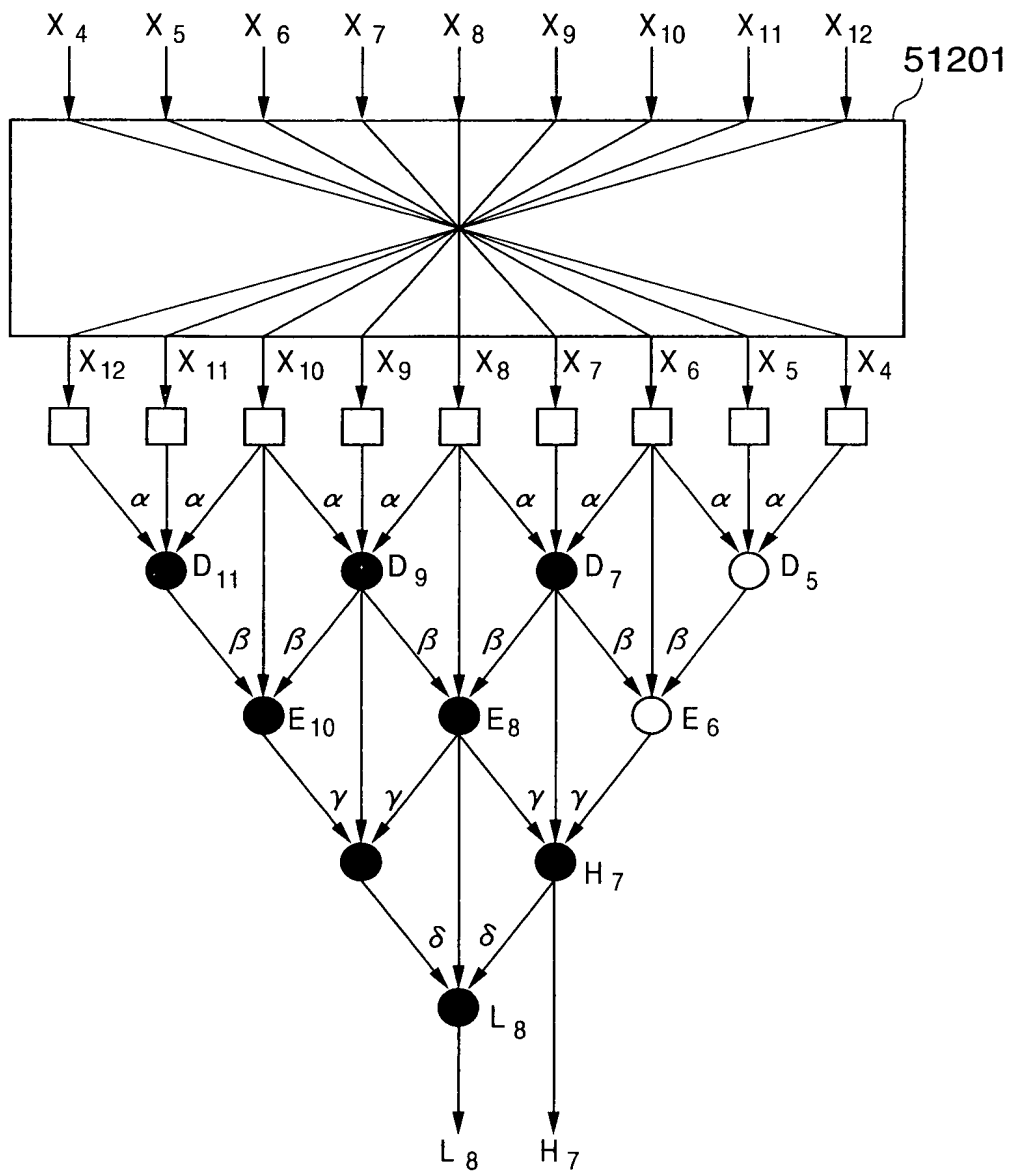


FIG. 51

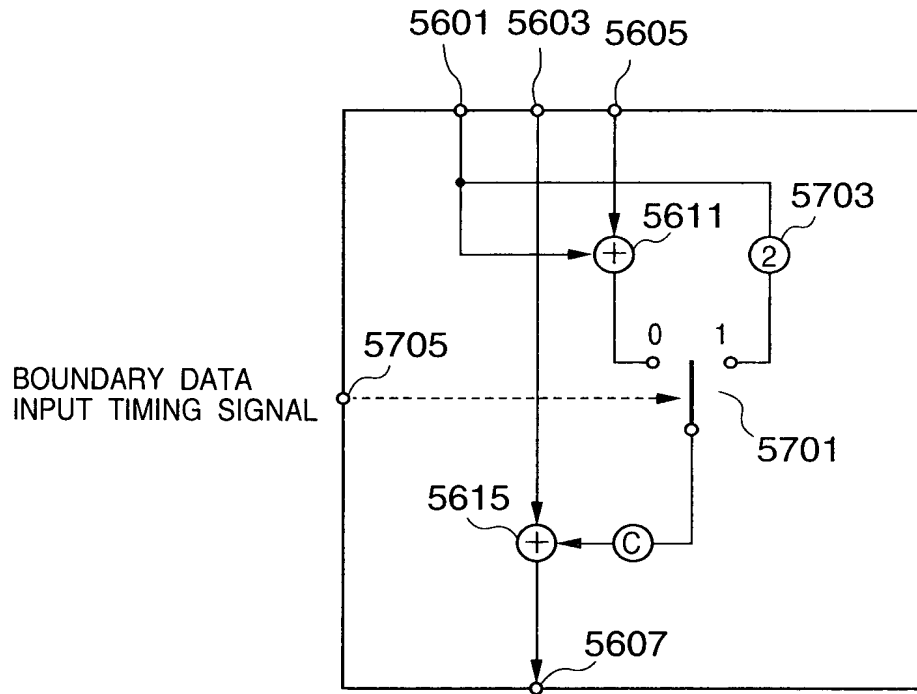
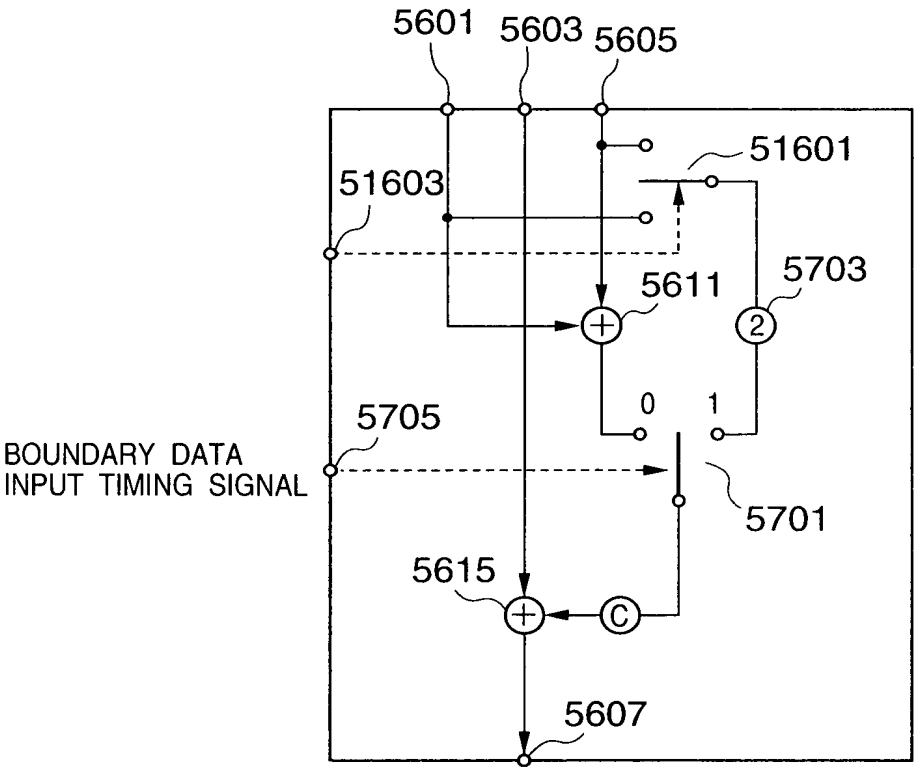


FIG. 52



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FIG. 53

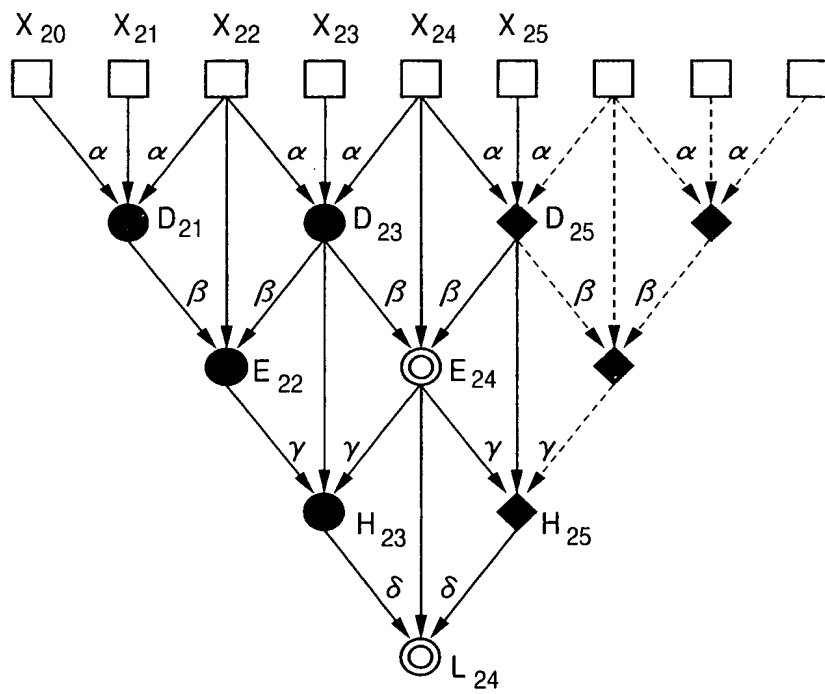


FIG. 54

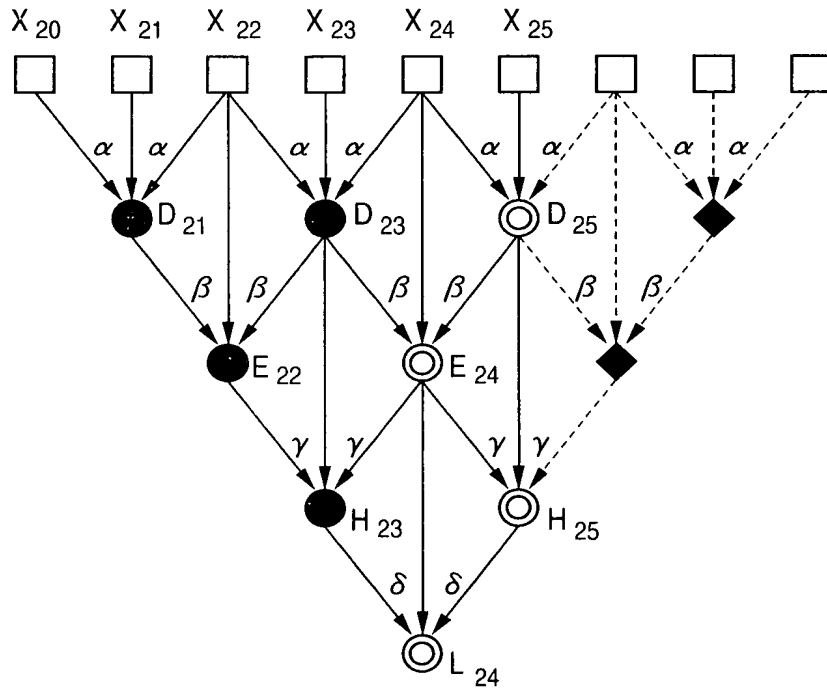
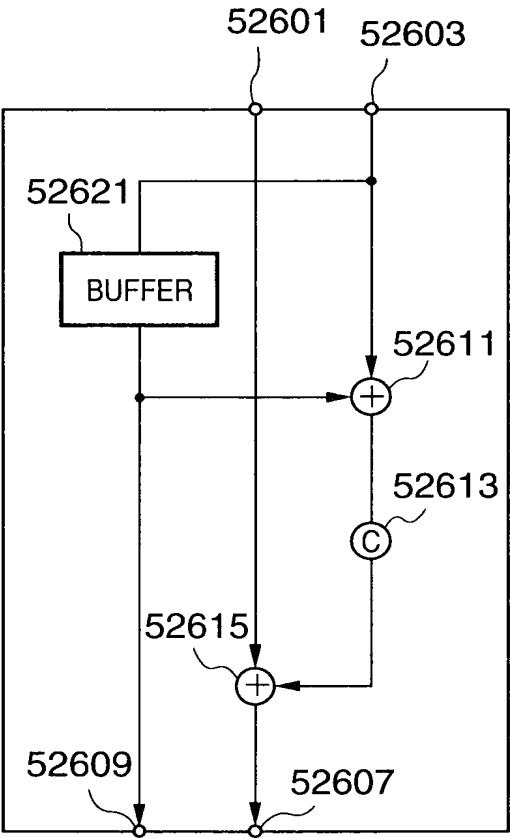


FIG. 55



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FIG. 56

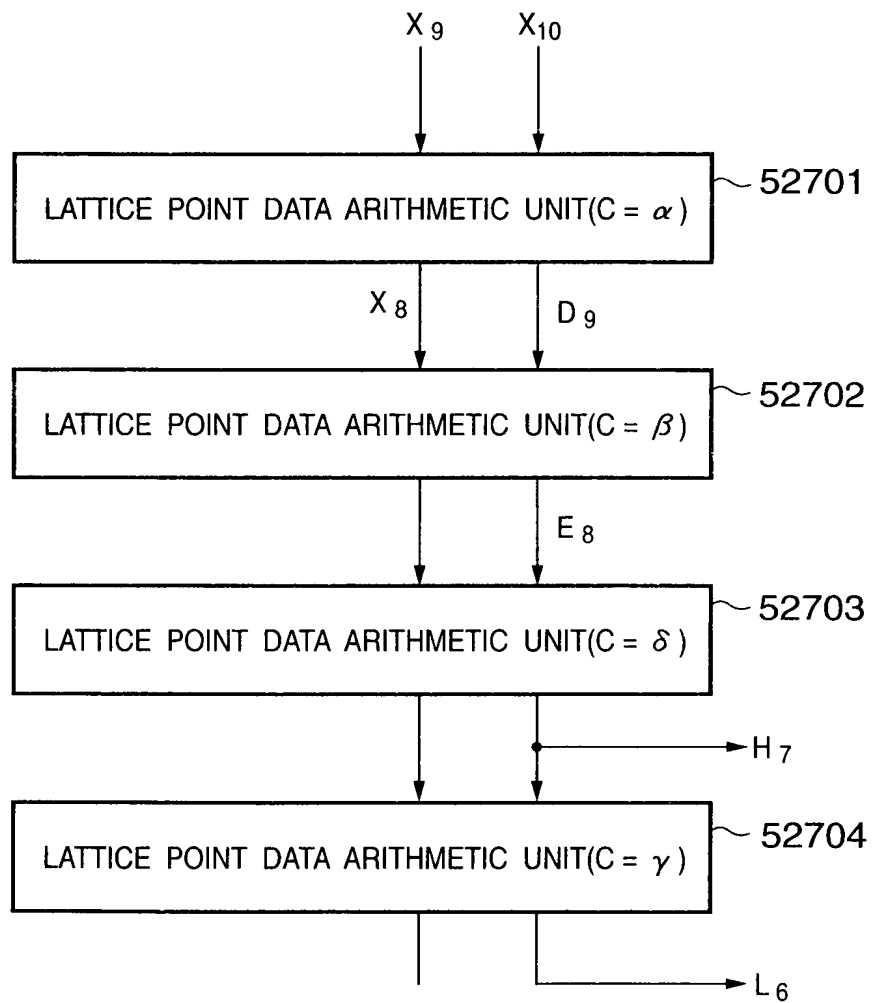
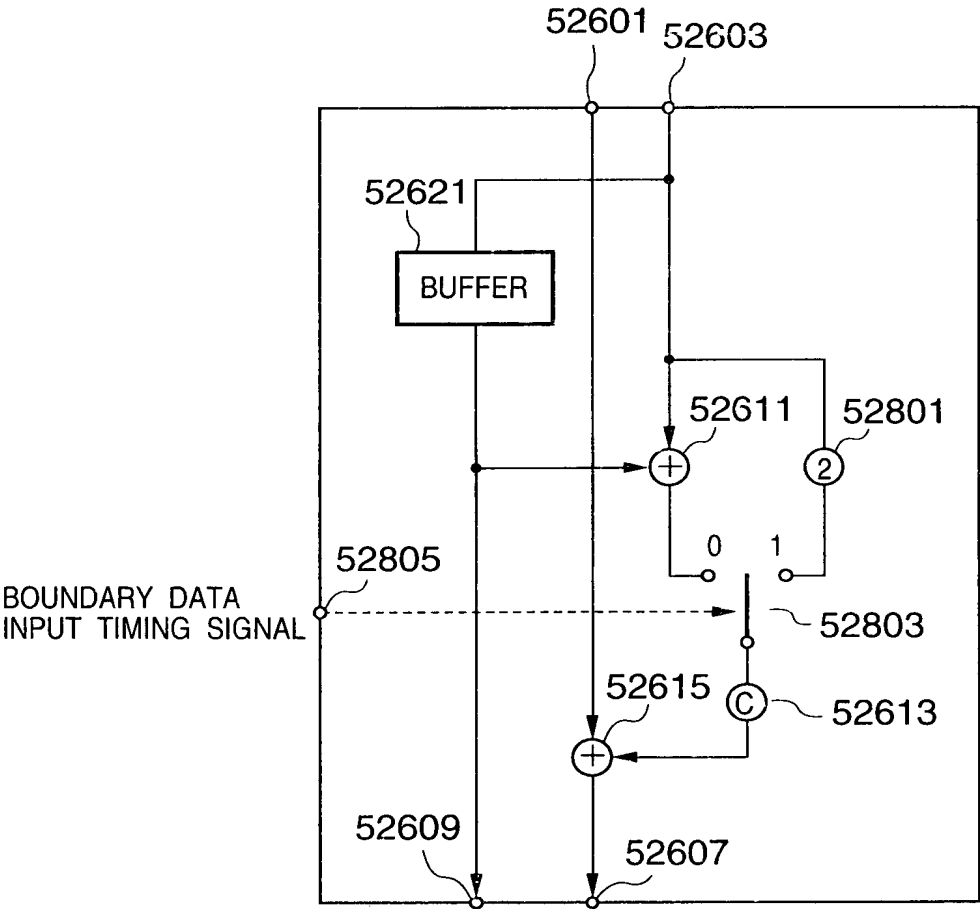


FIG. 57



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FIG. 58

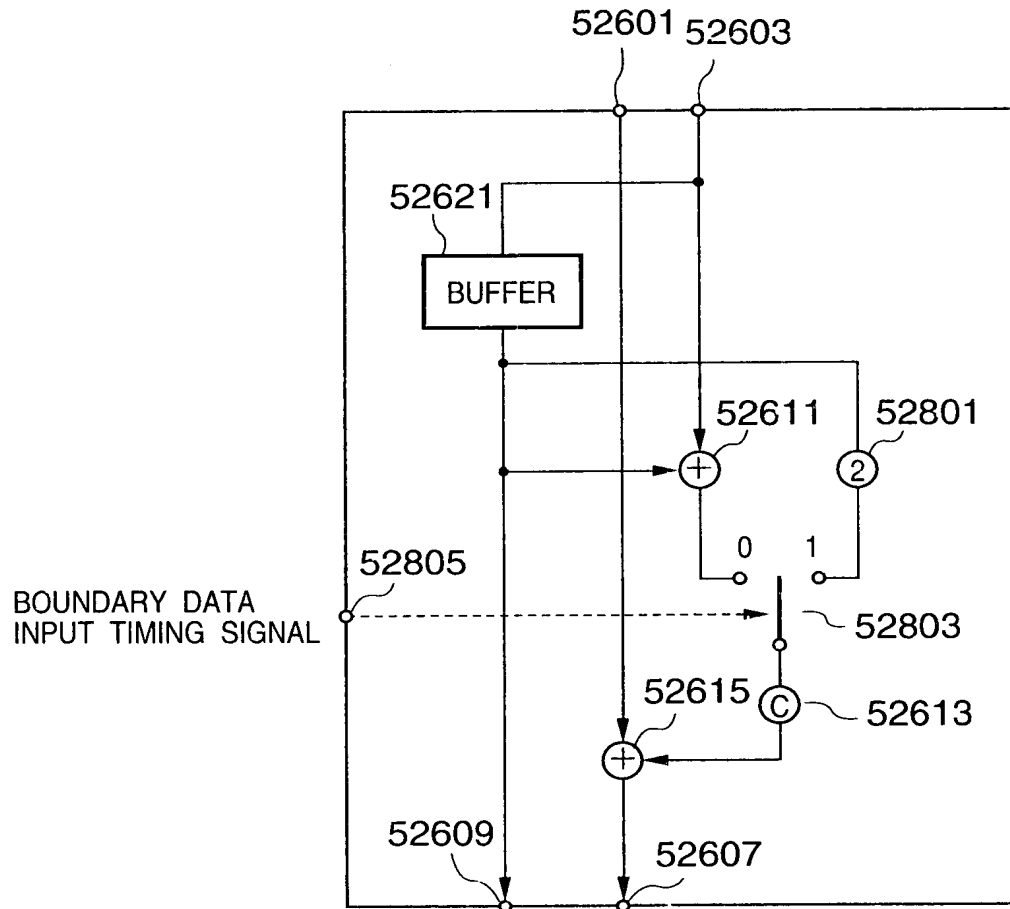


FIG. 59

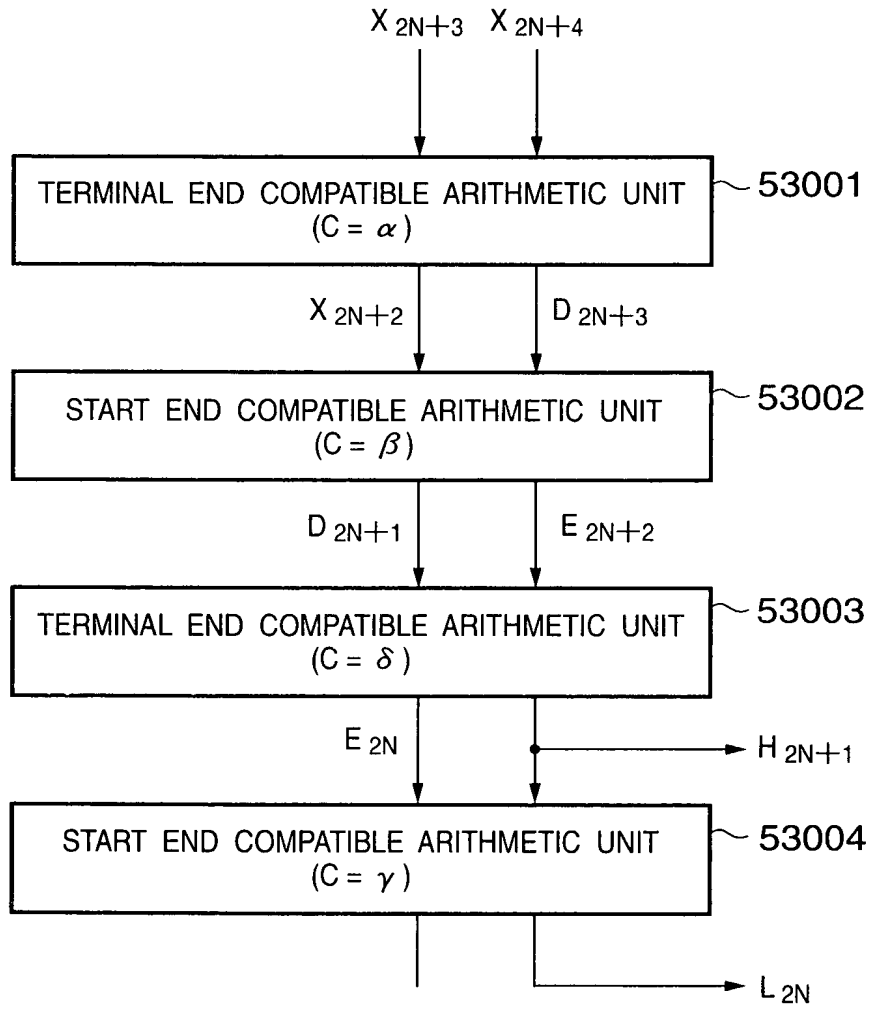
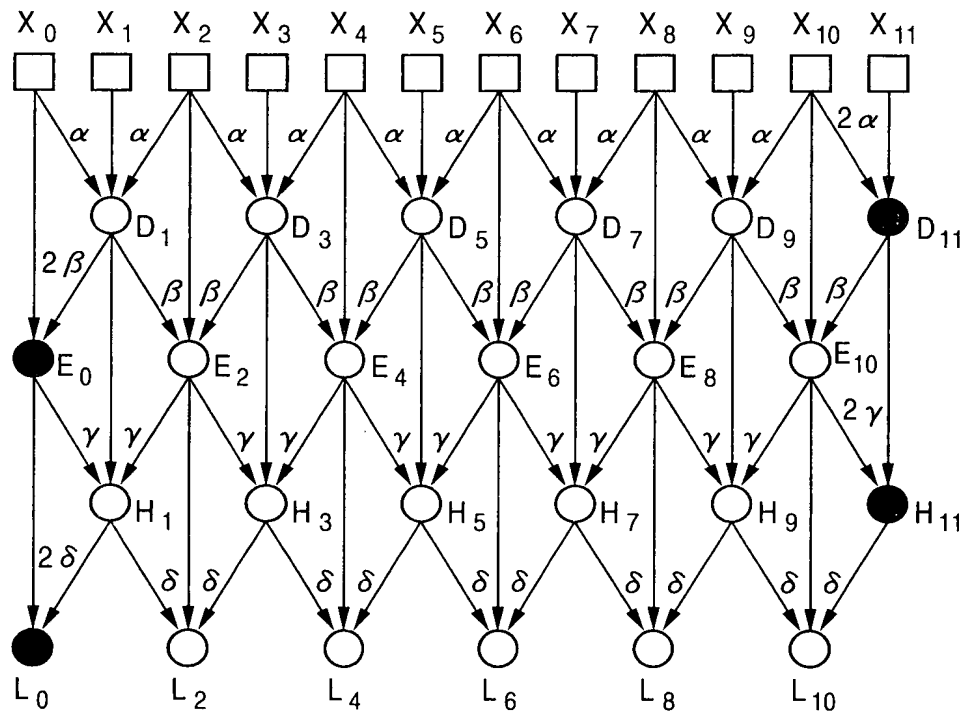
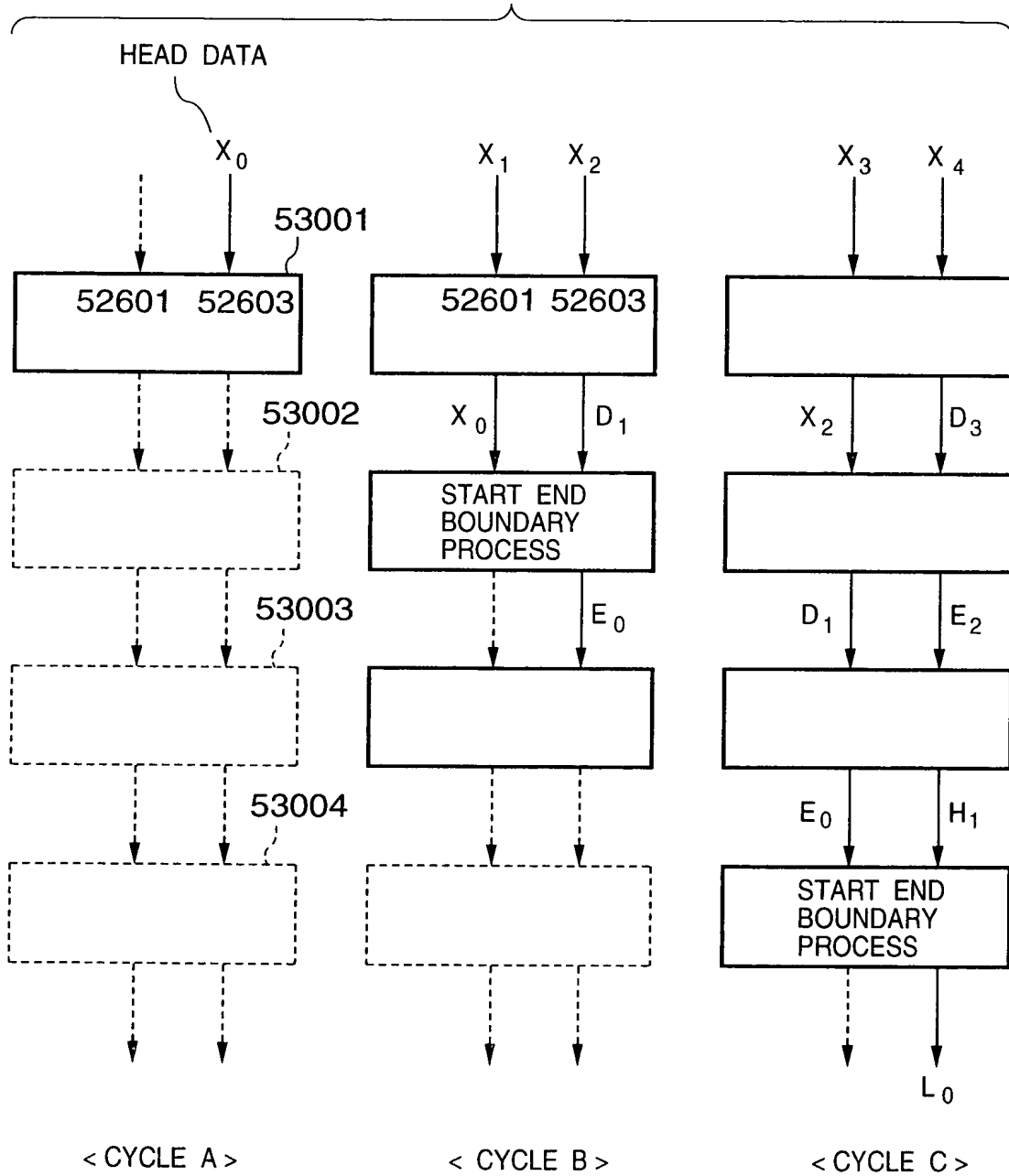


FIG. 60



**FIG. 61**

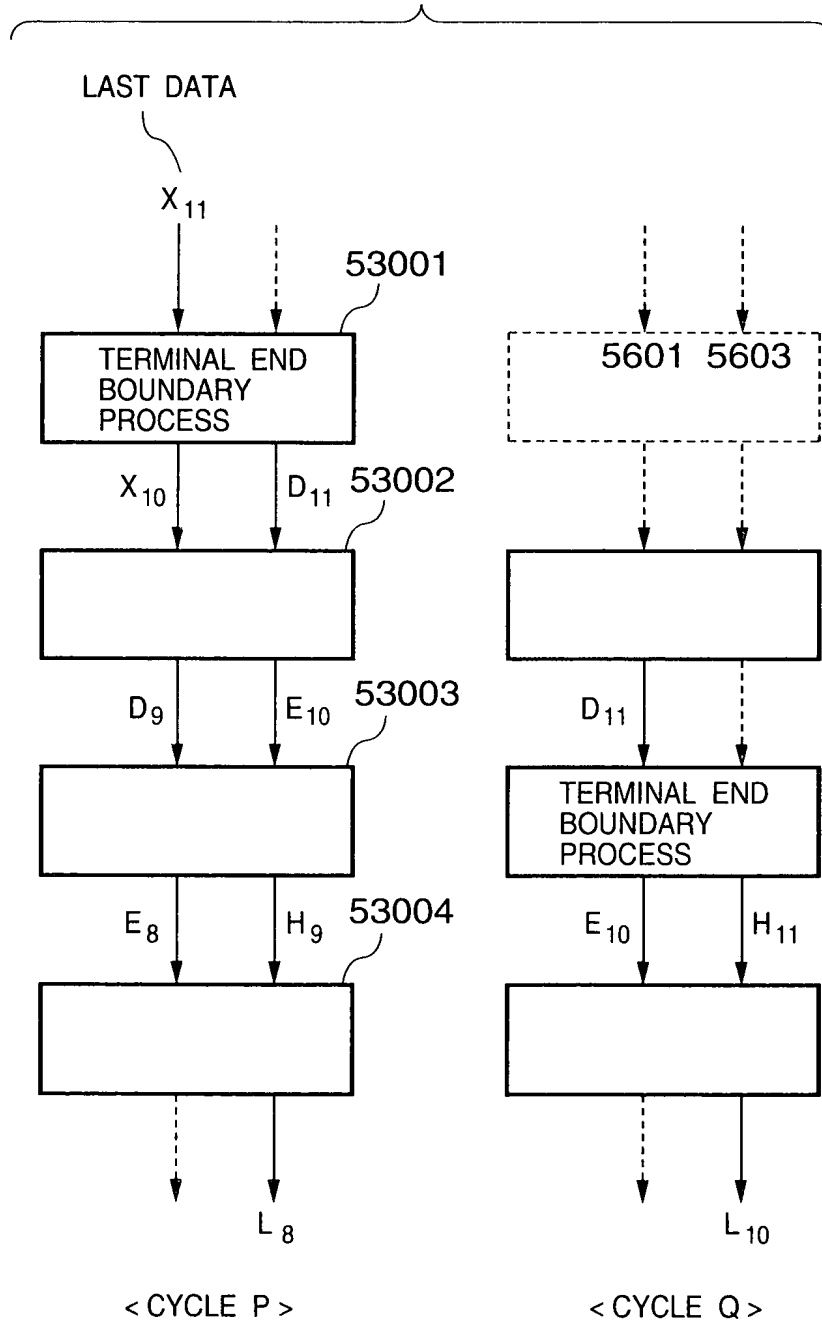
**FIG. 62**

FIG. 63

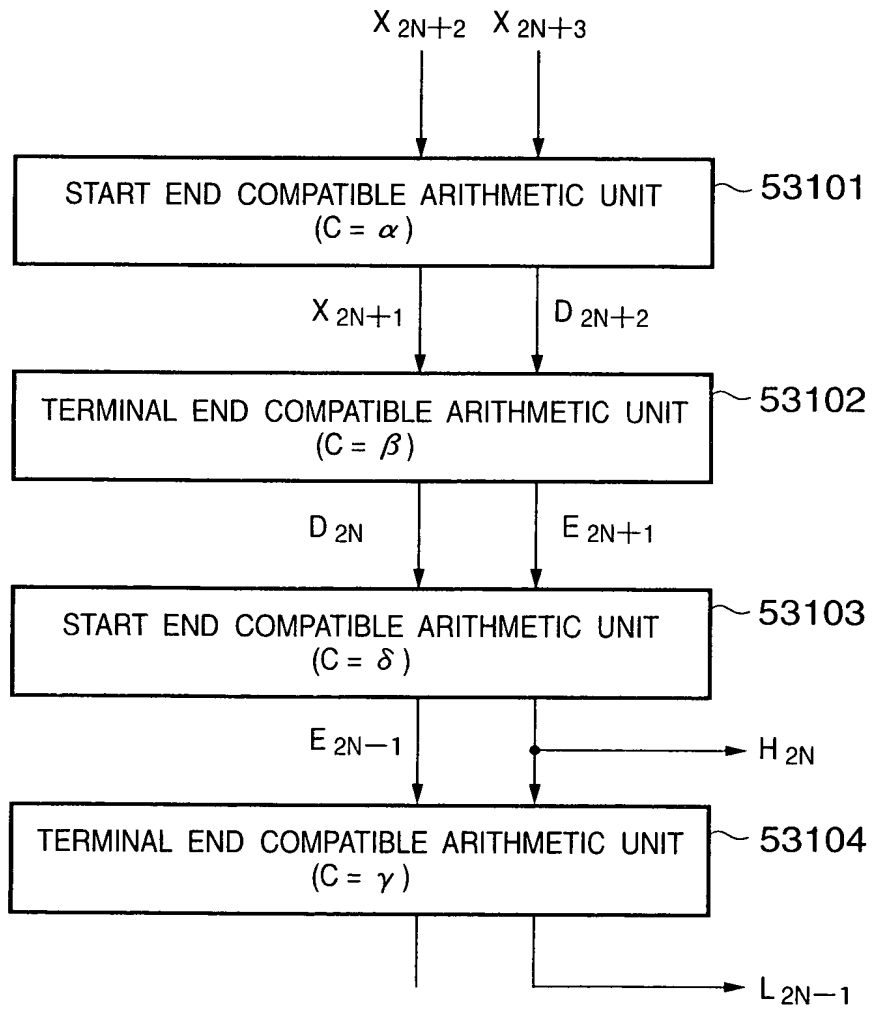


FIG. 64

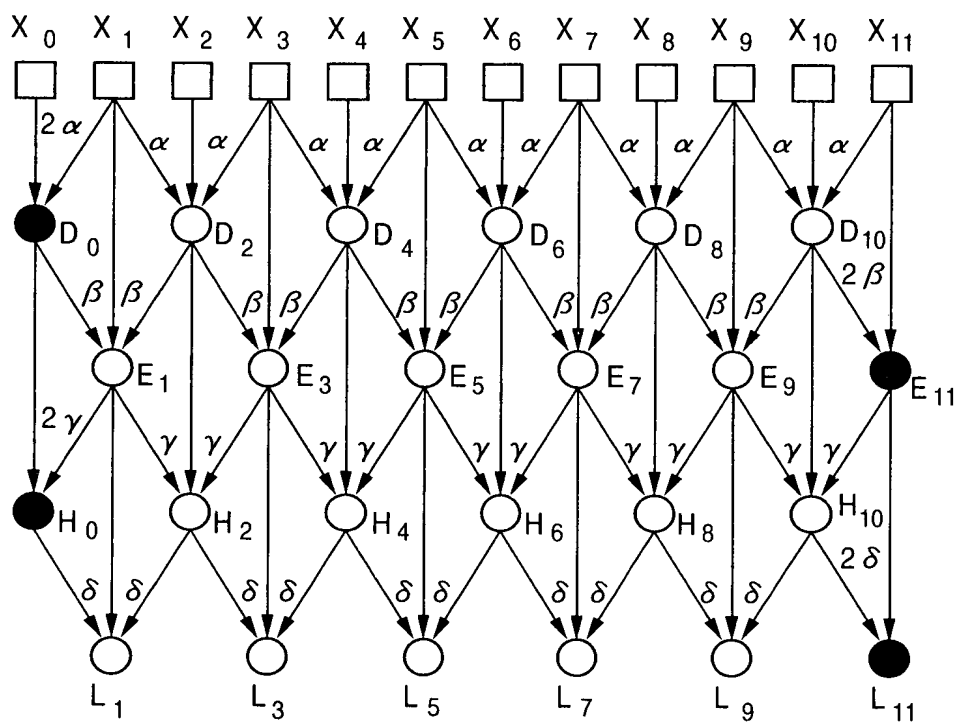
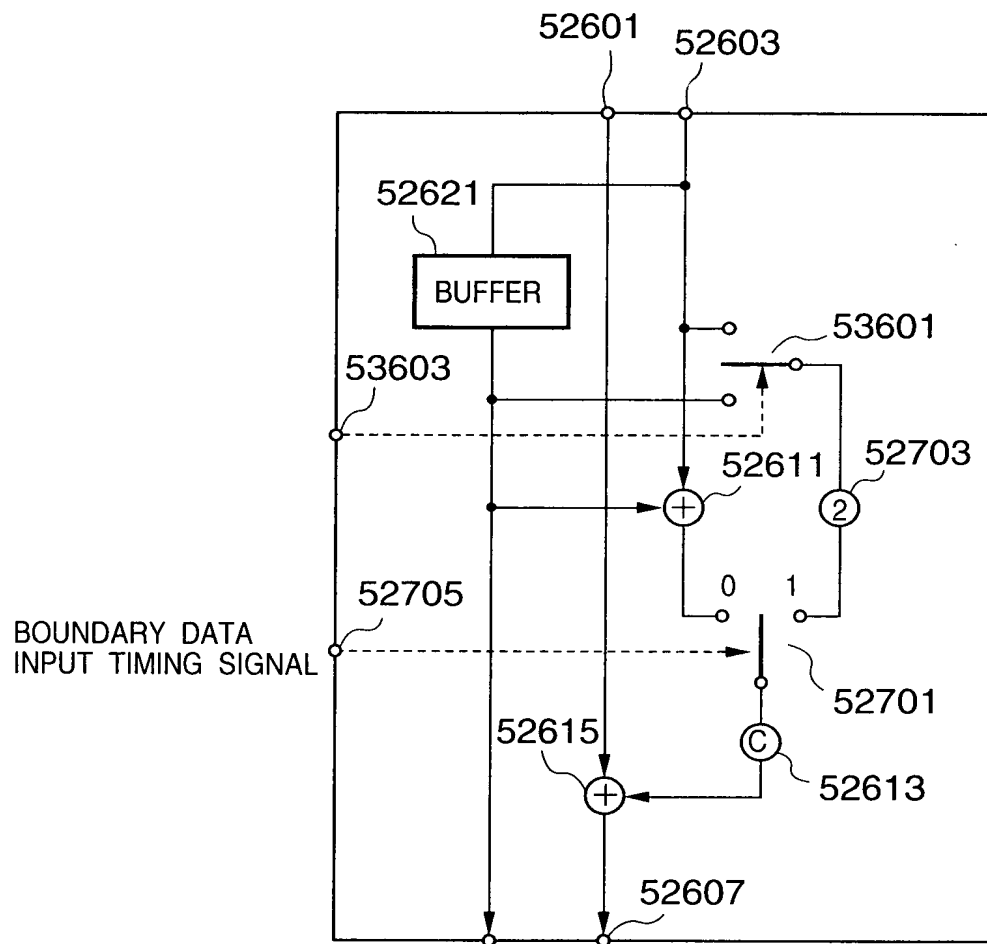


FIG. 65



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FIG. 66

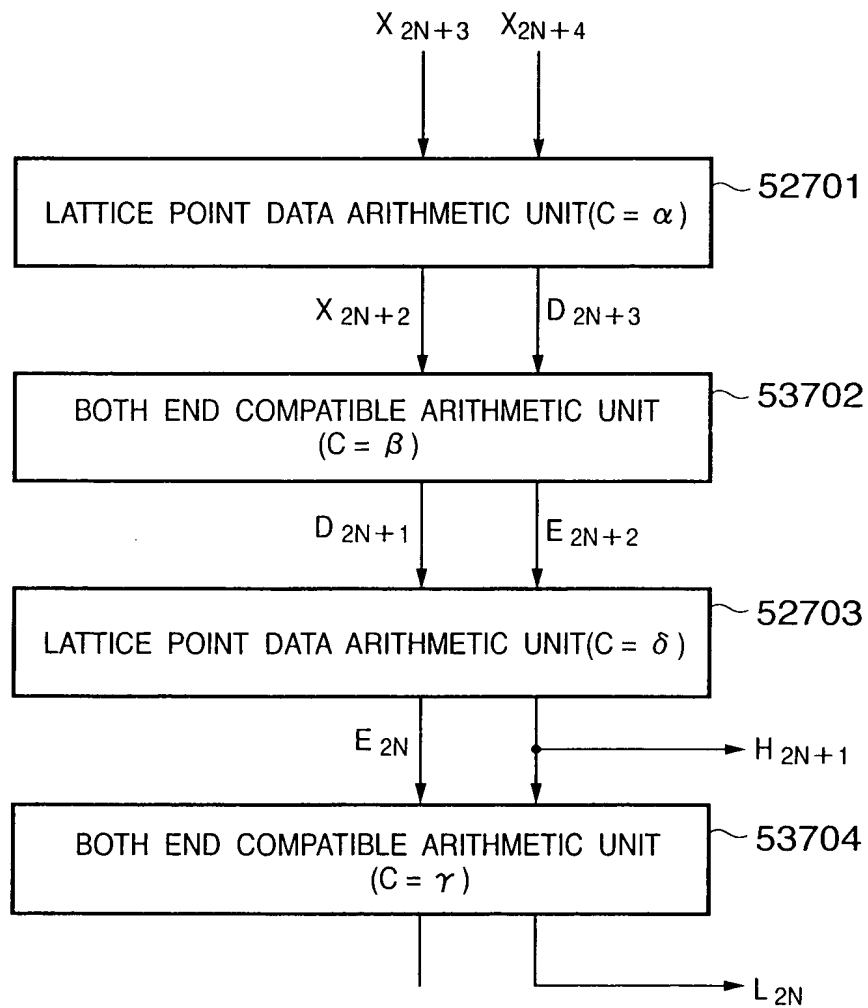


FIG. 67

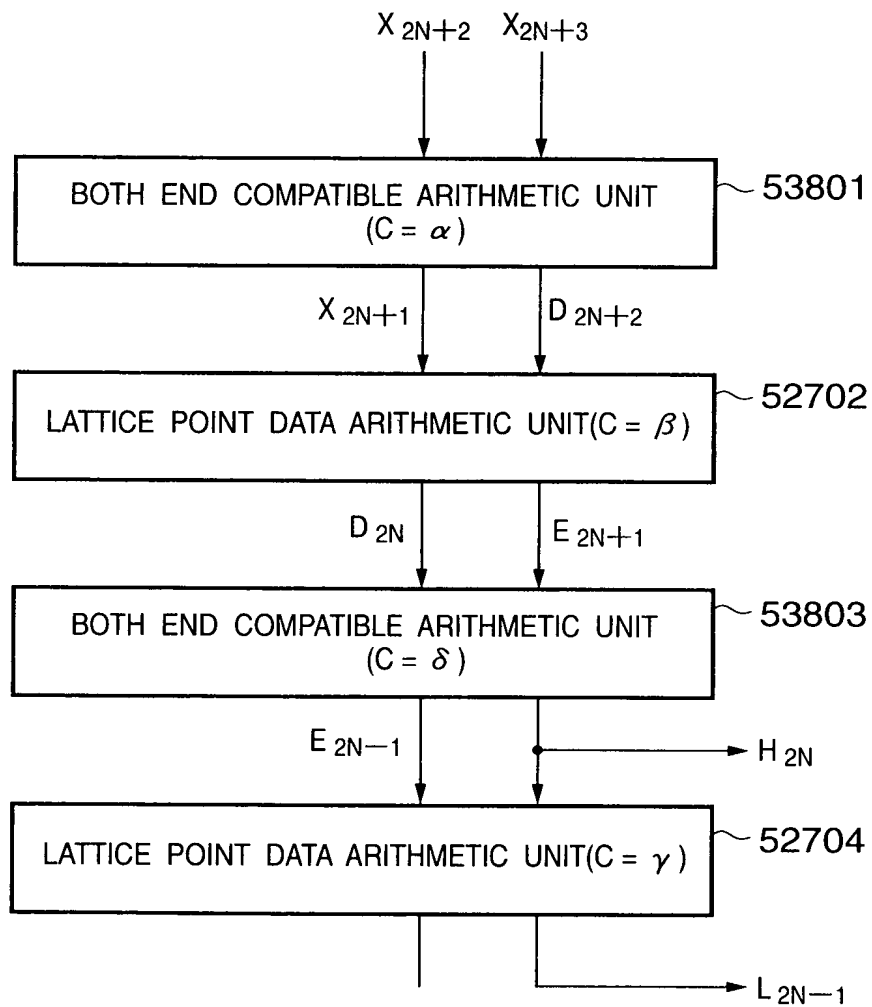


FIG. 68

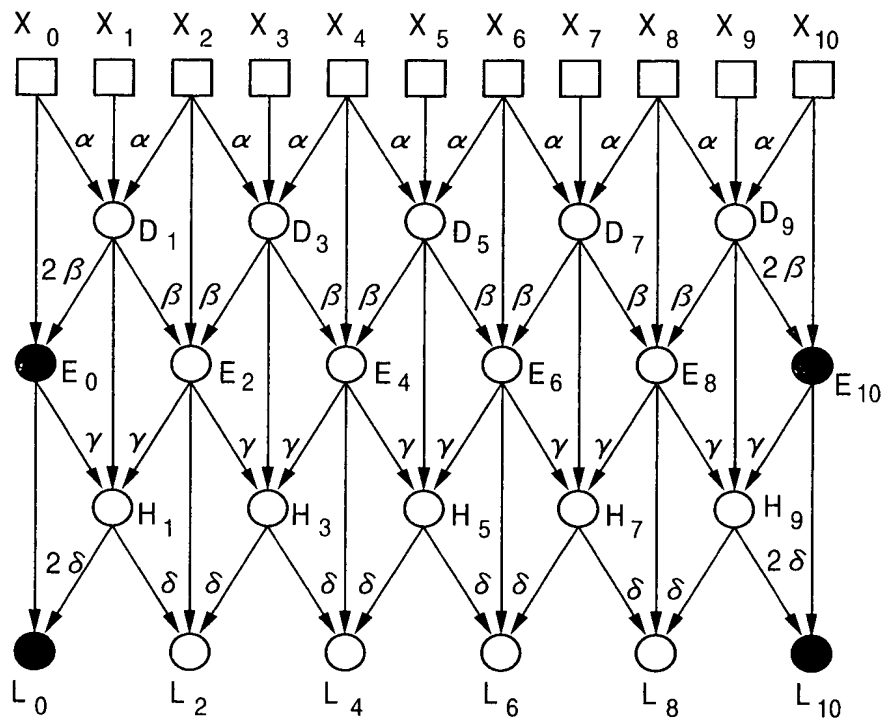
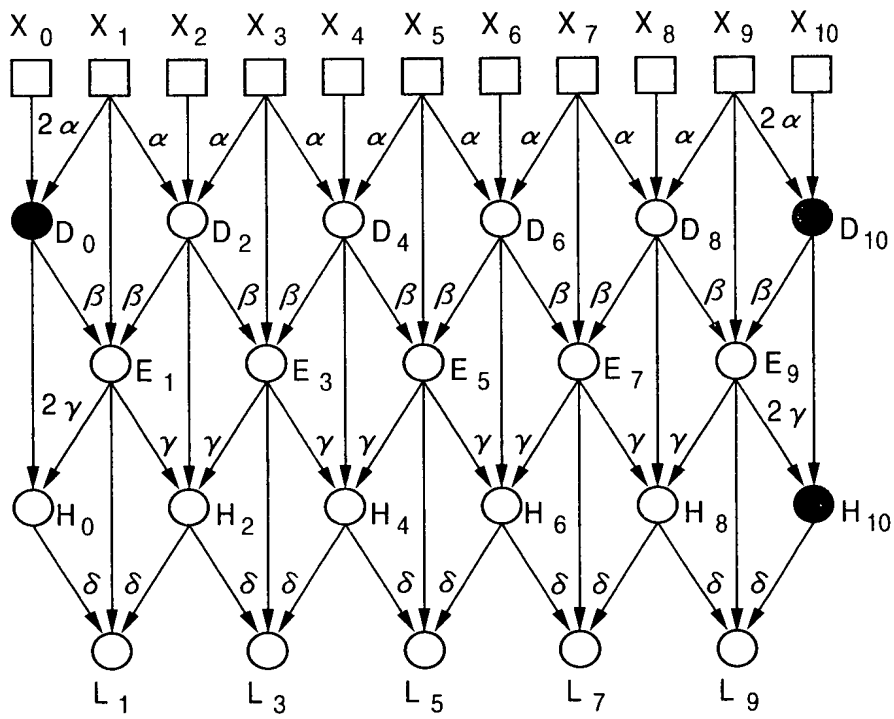


FIG. 69



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FIG. 70

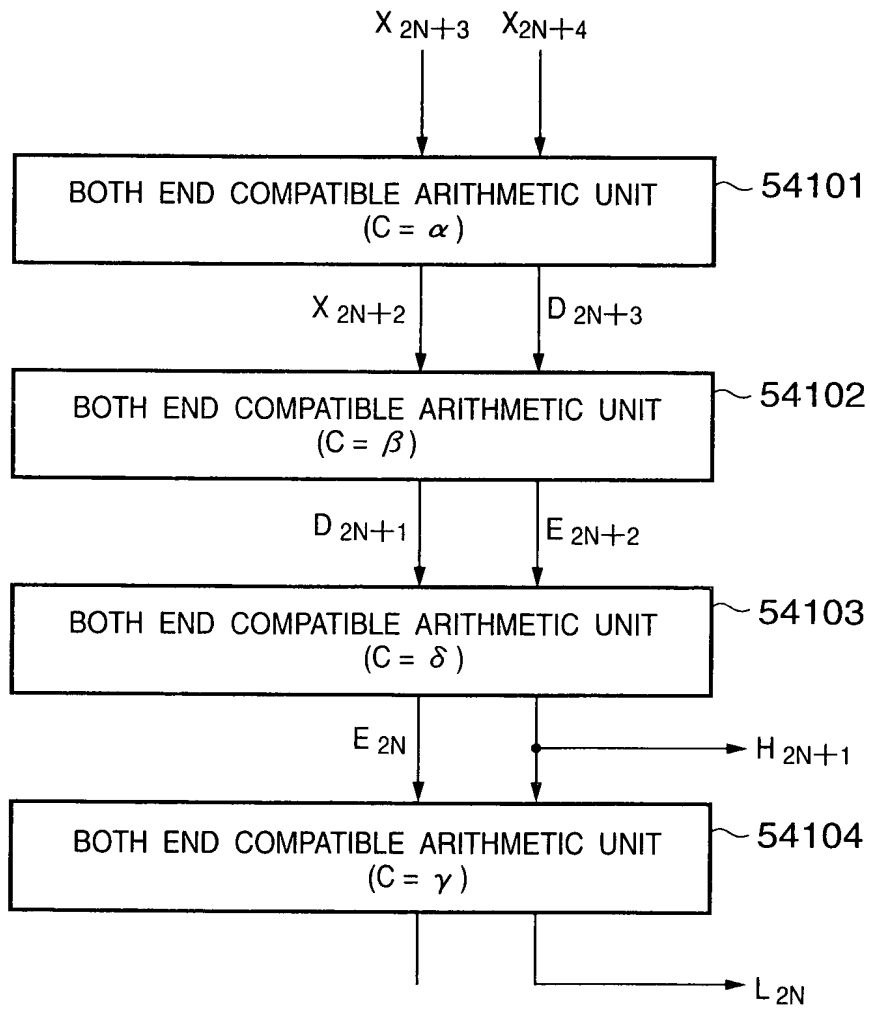
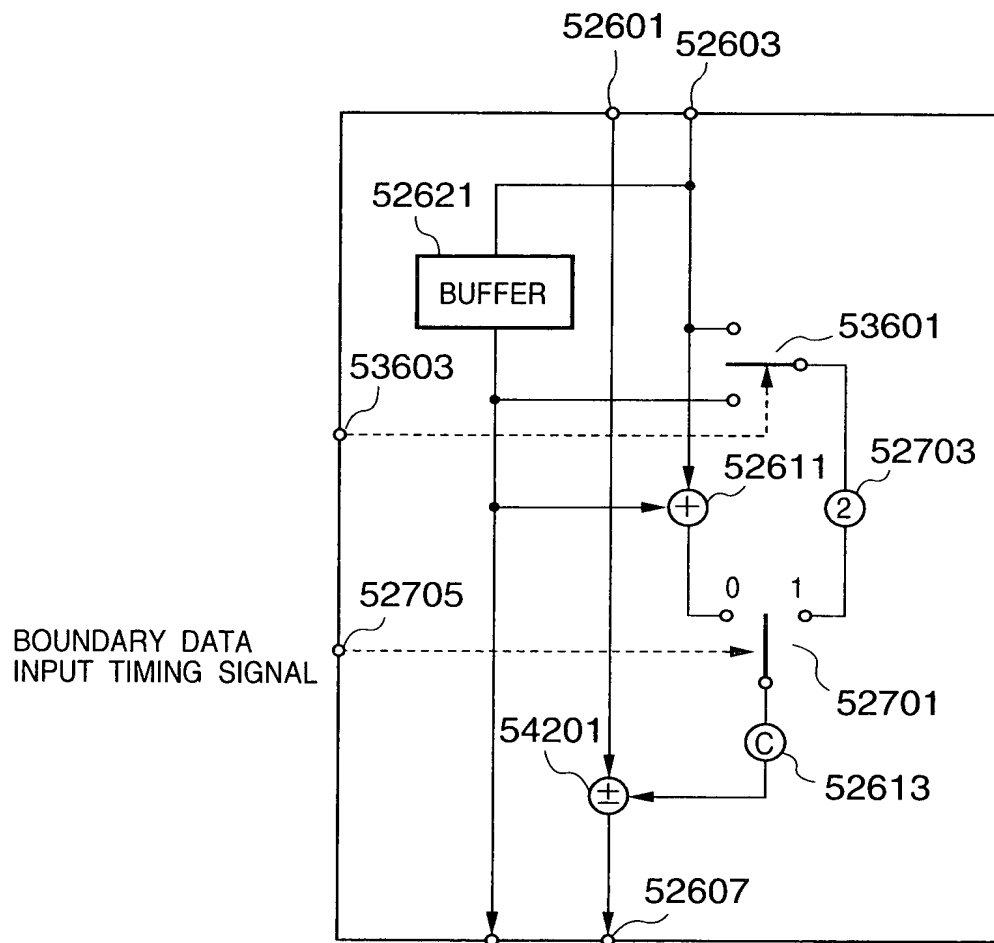


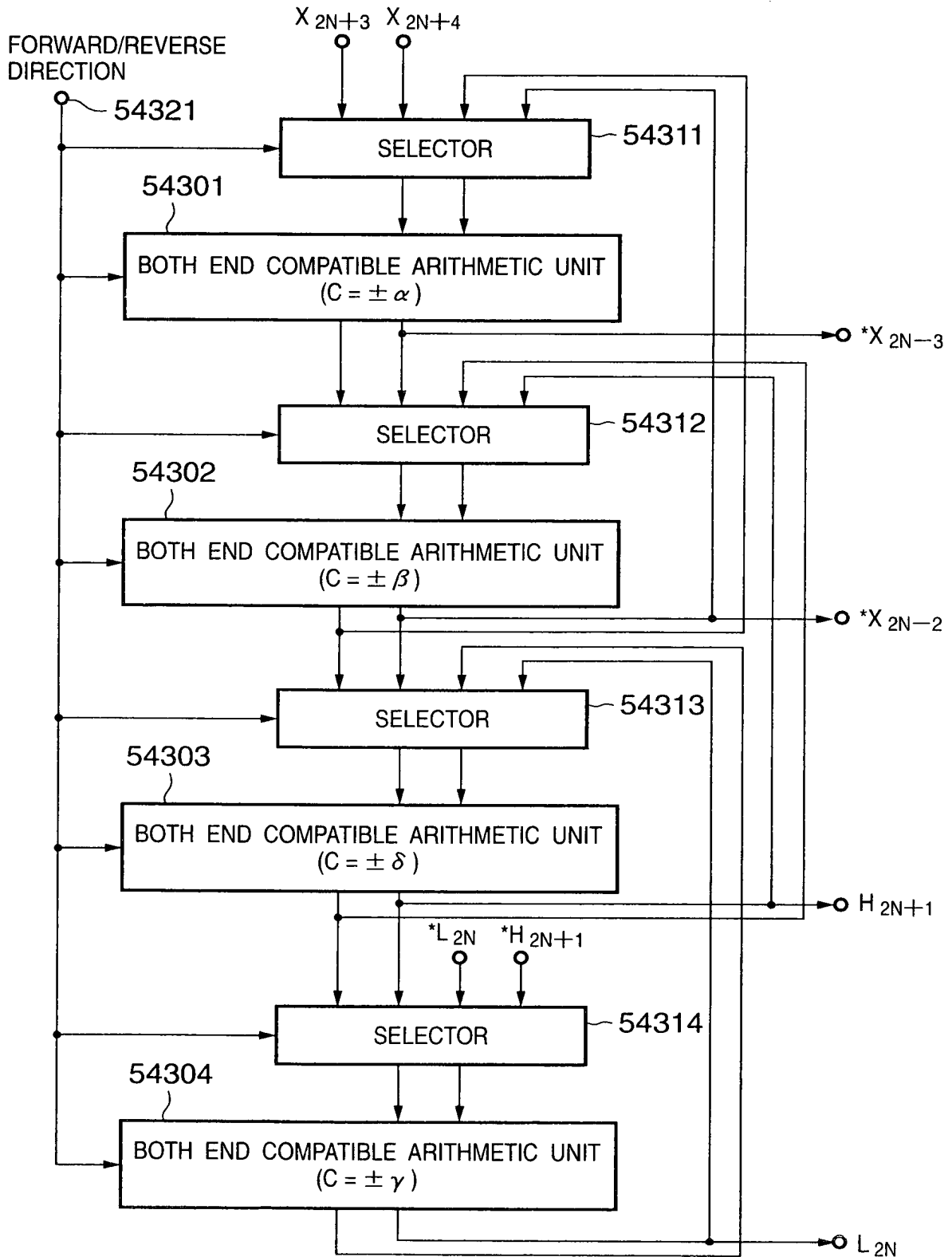
FIG. 71



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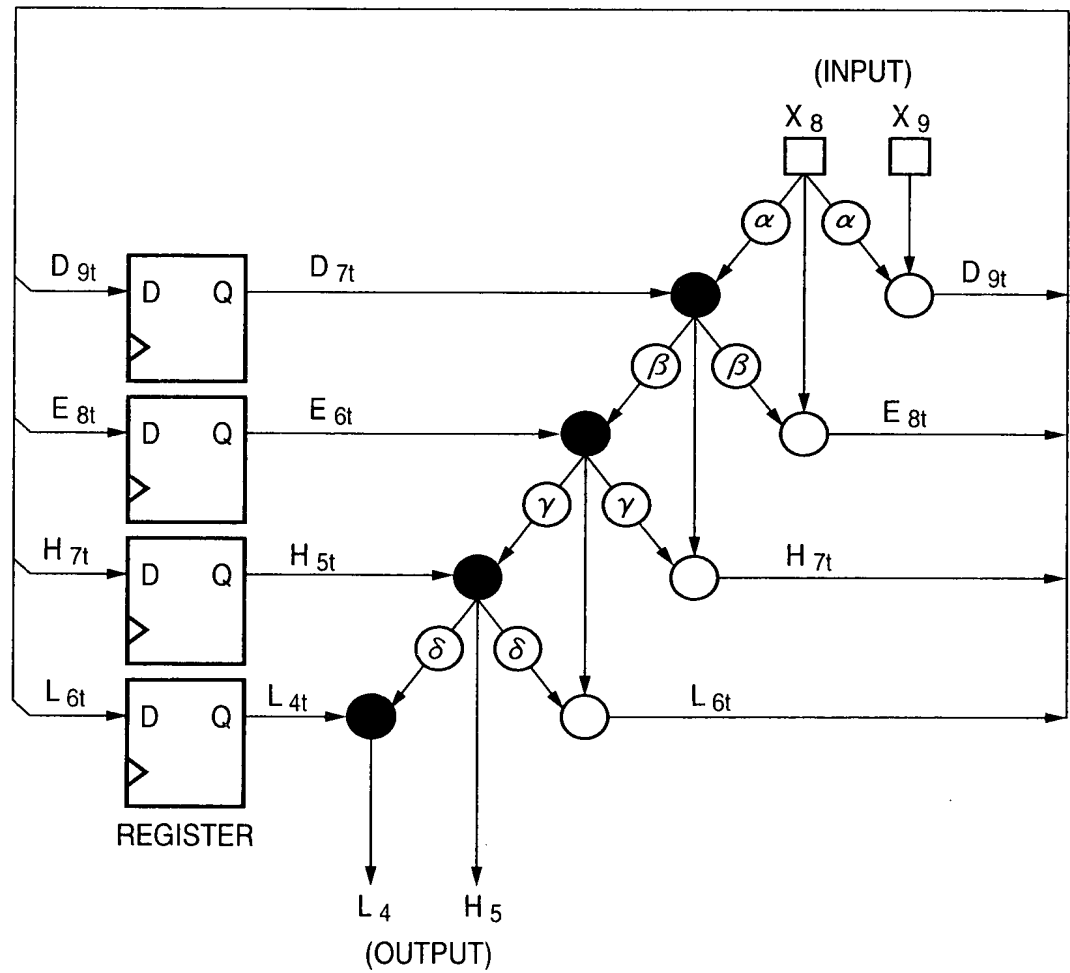
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FIG. 72



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FIG. 73



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FIG. 74

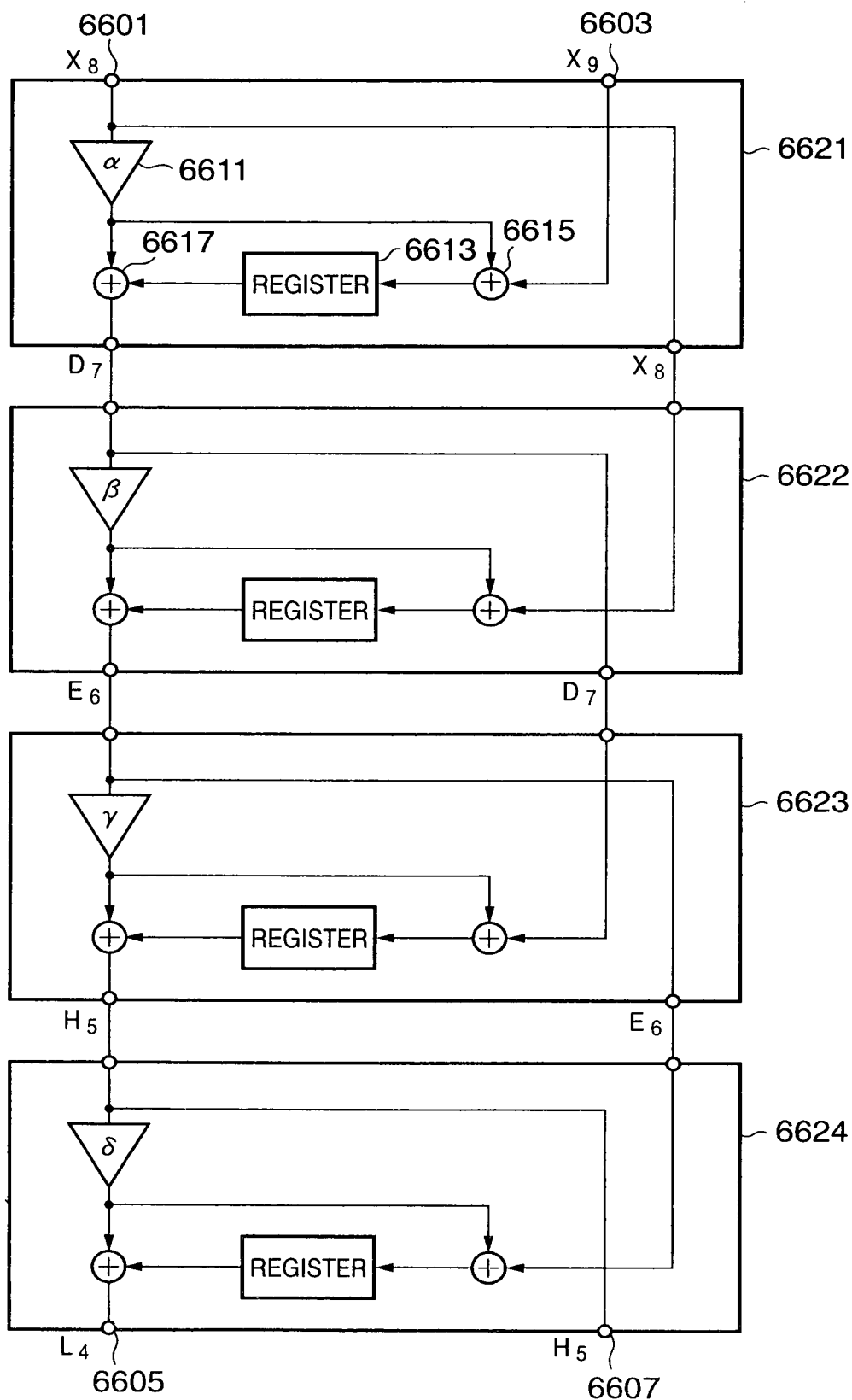
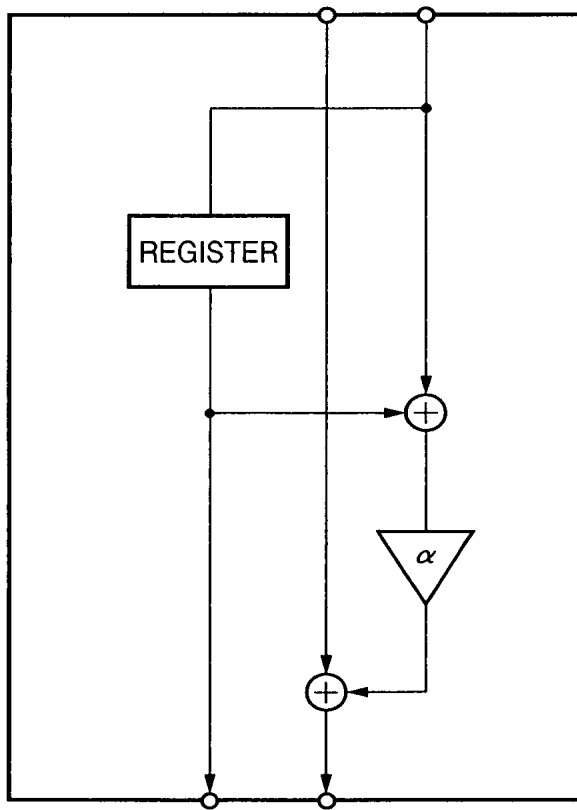


FIG. 75

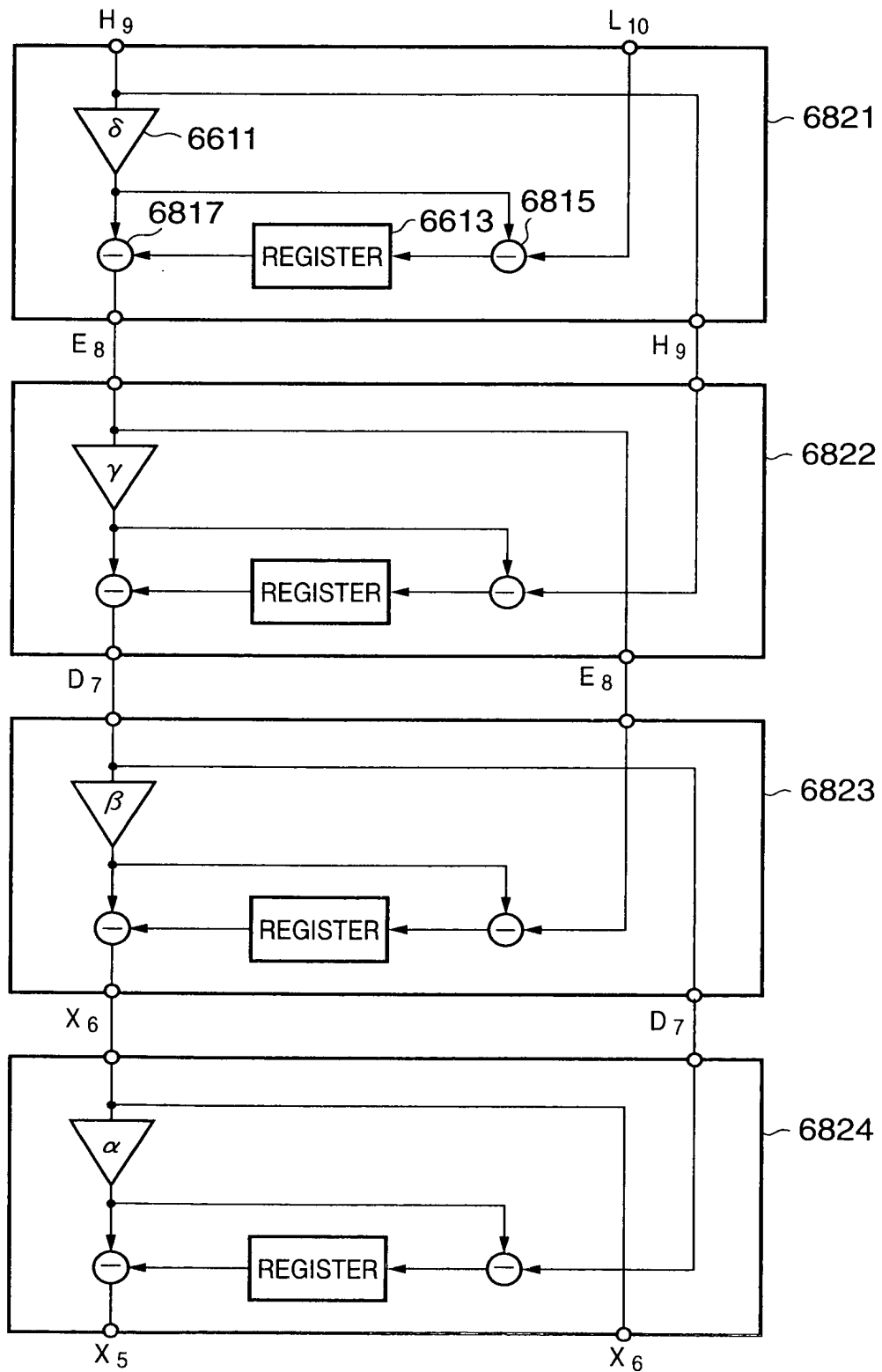


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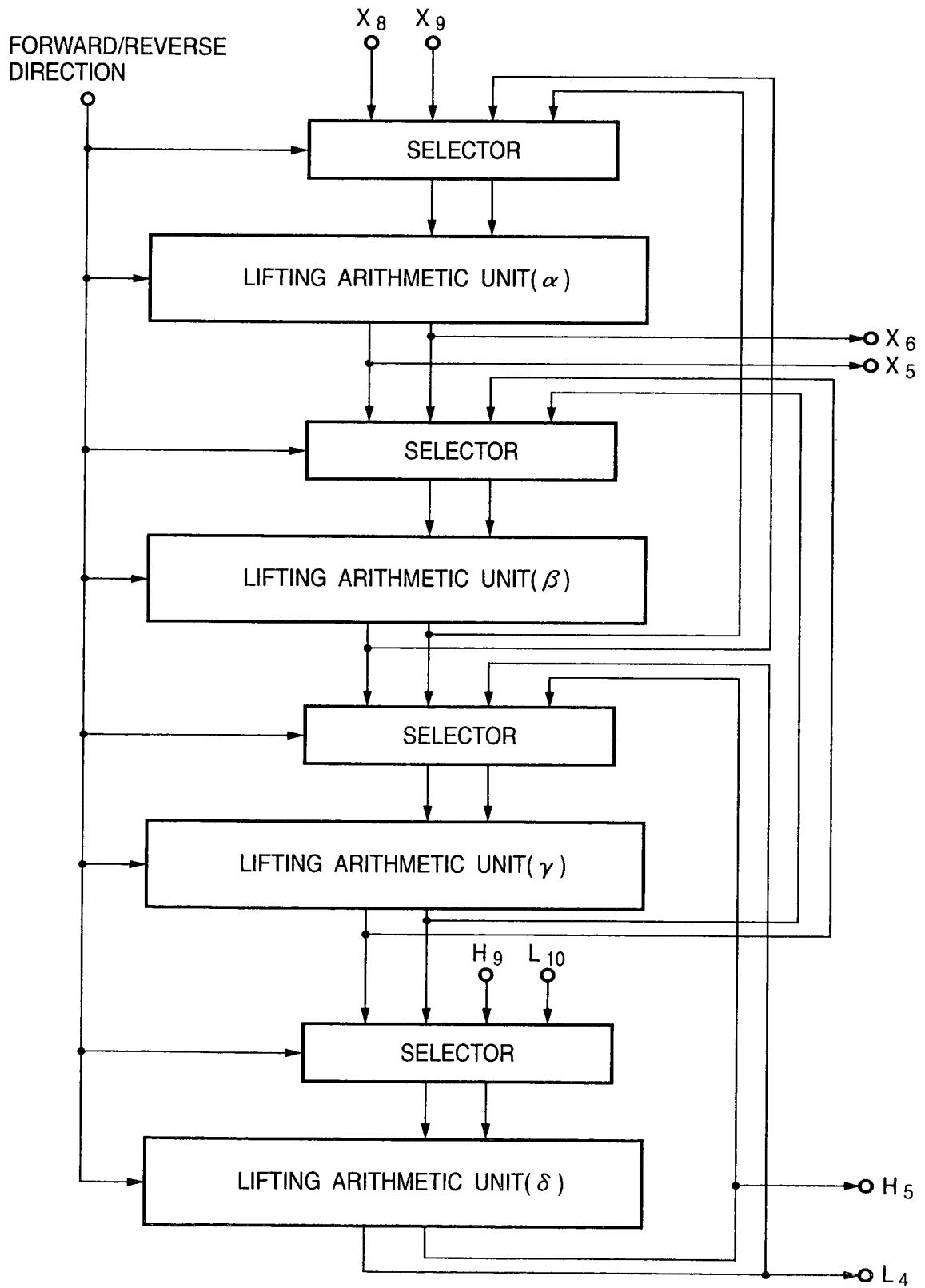
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FIG. 76



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FIG. 77



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FIG. 78

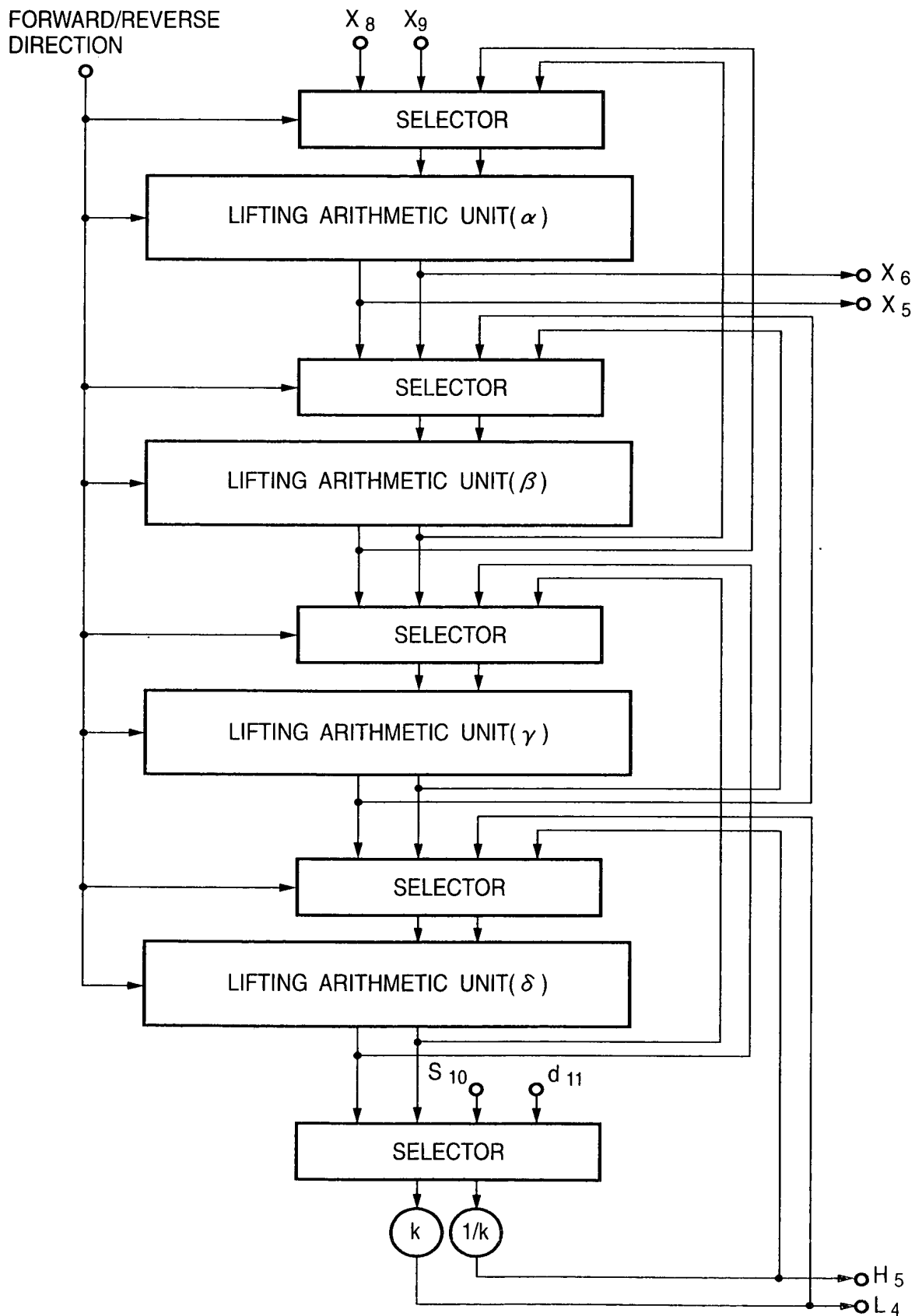
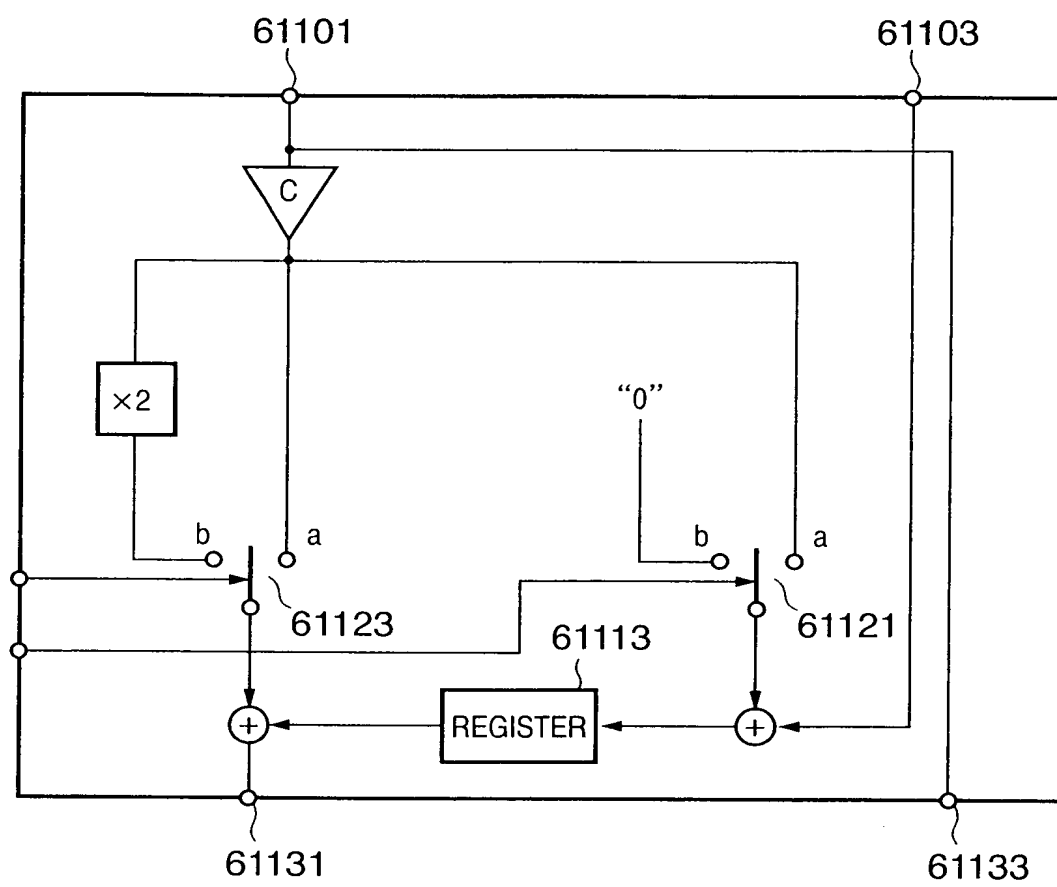


FIG. 79



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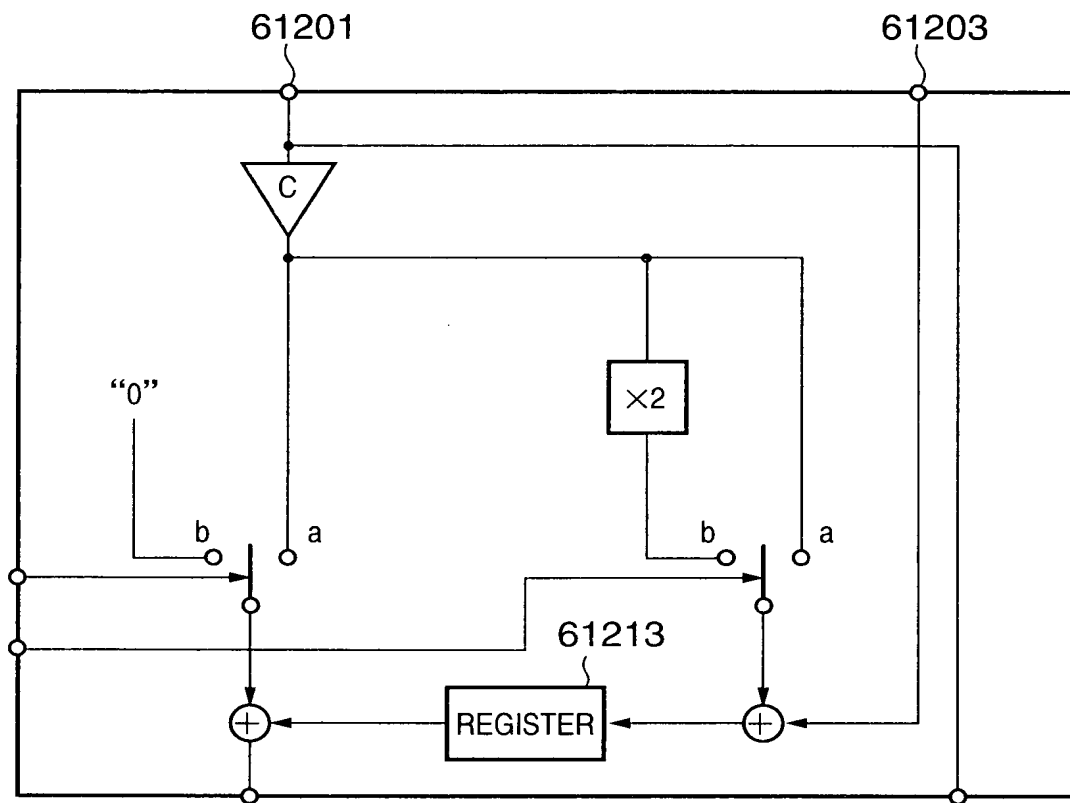
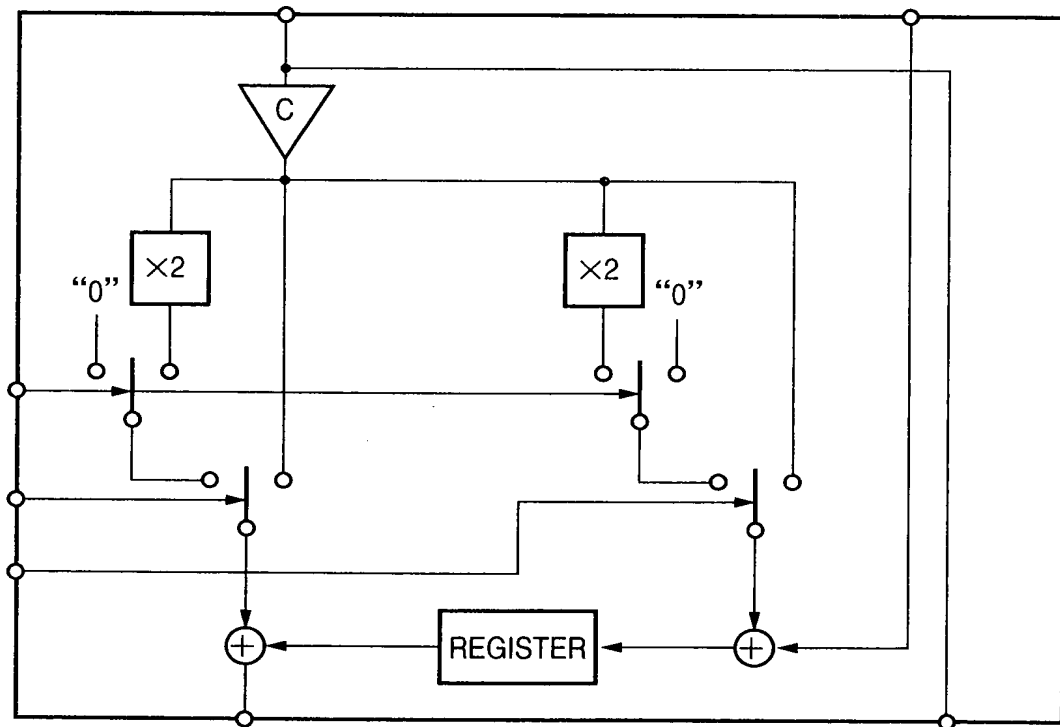
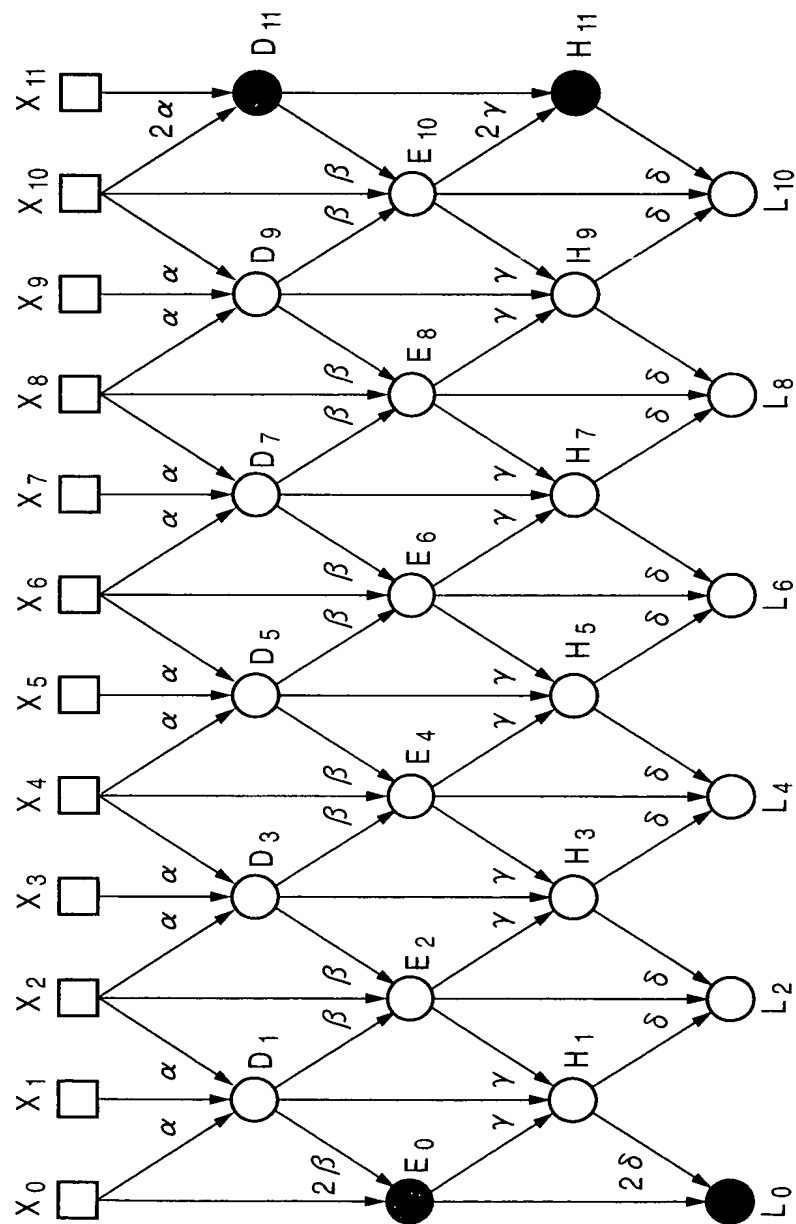
**FIG. 80**

FIG. 81



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FIG. 82



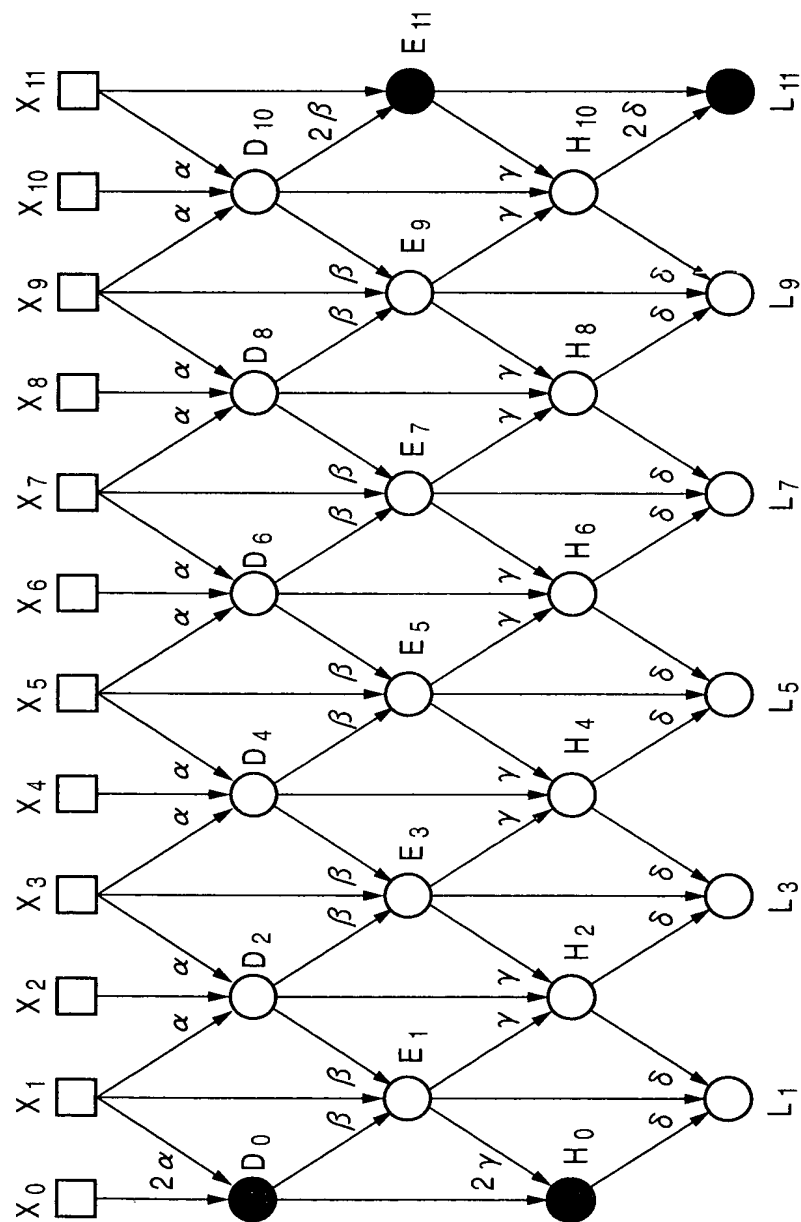
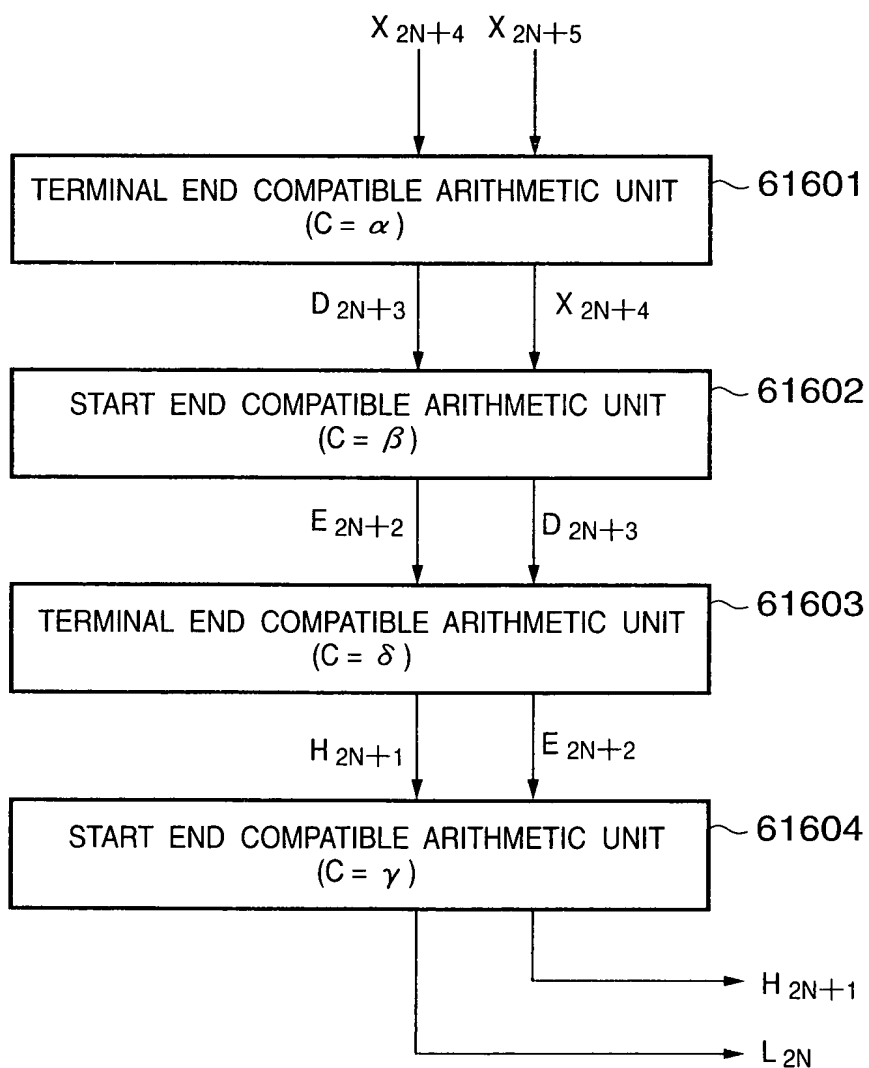


FIG. 84



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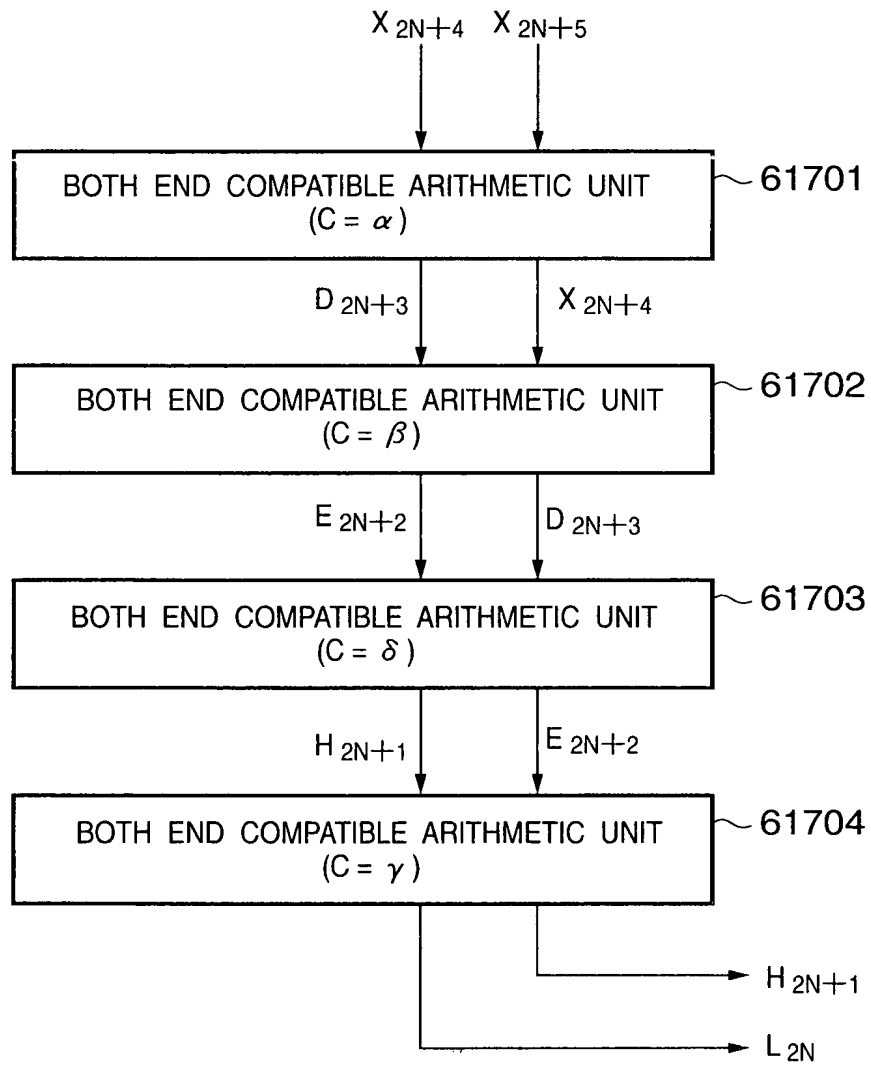
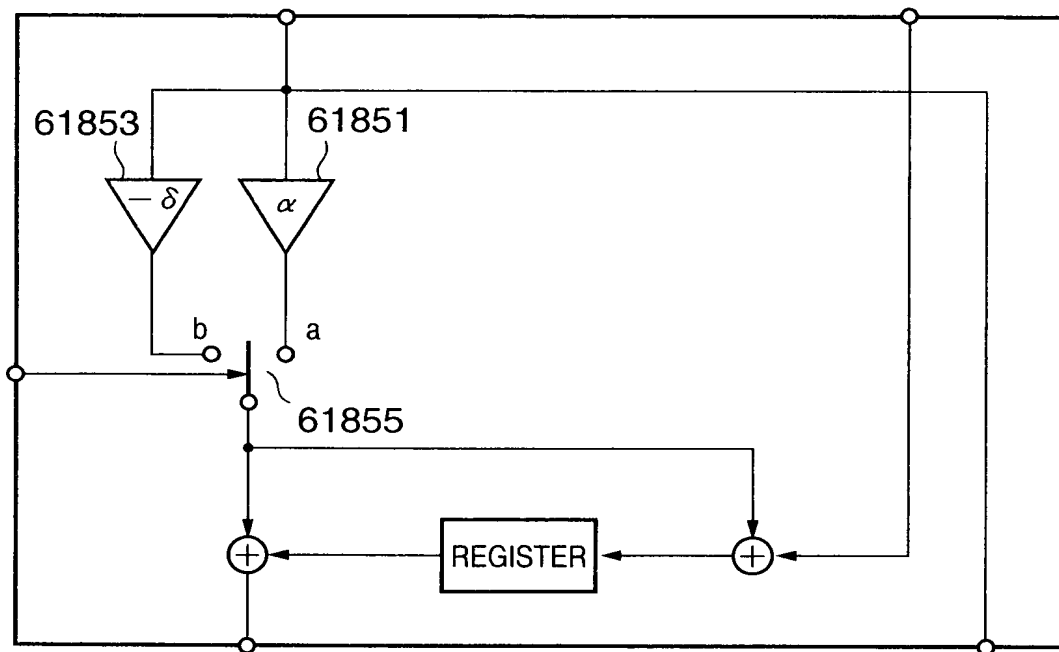
**FIG. 85**

FIG. 86



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FIG. 87

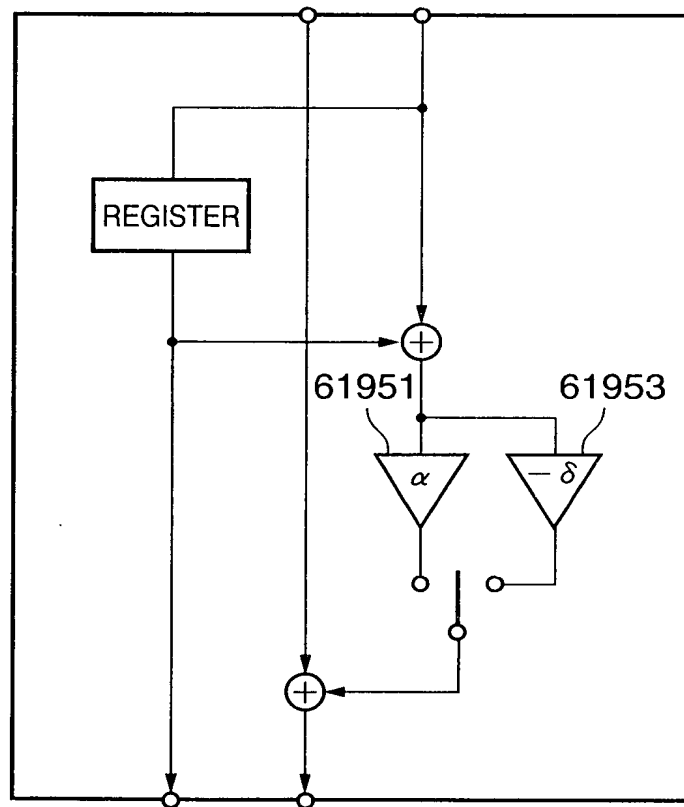
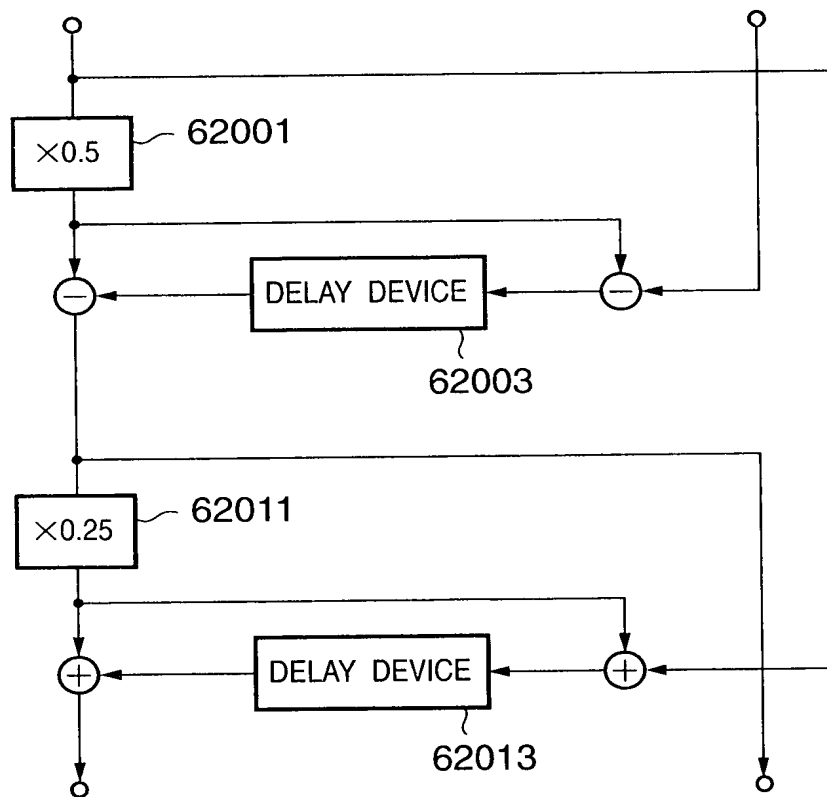


FIG. 88



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FIG. 89

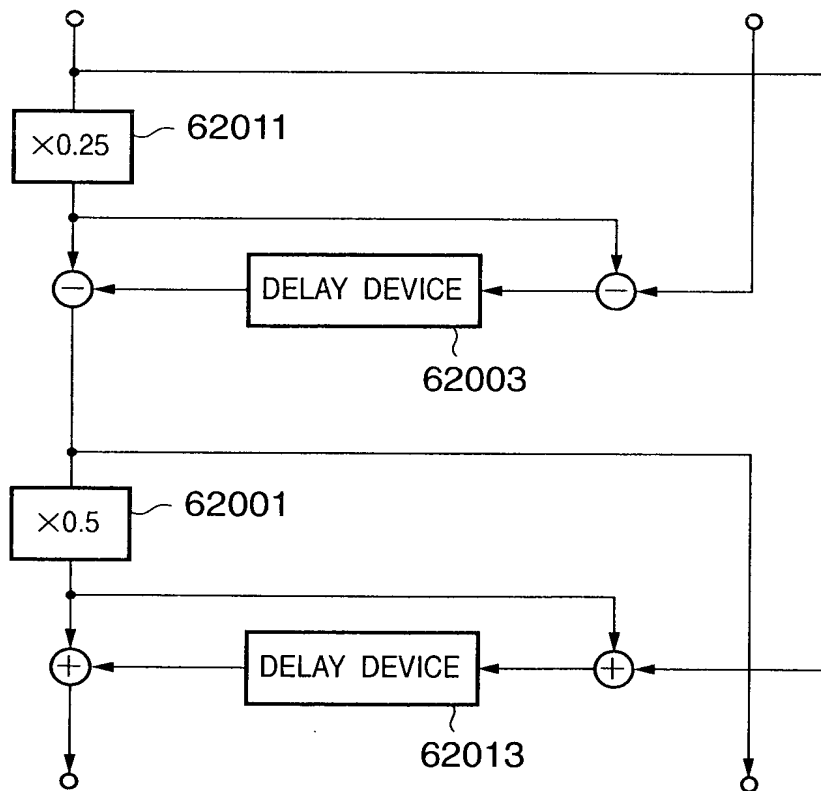
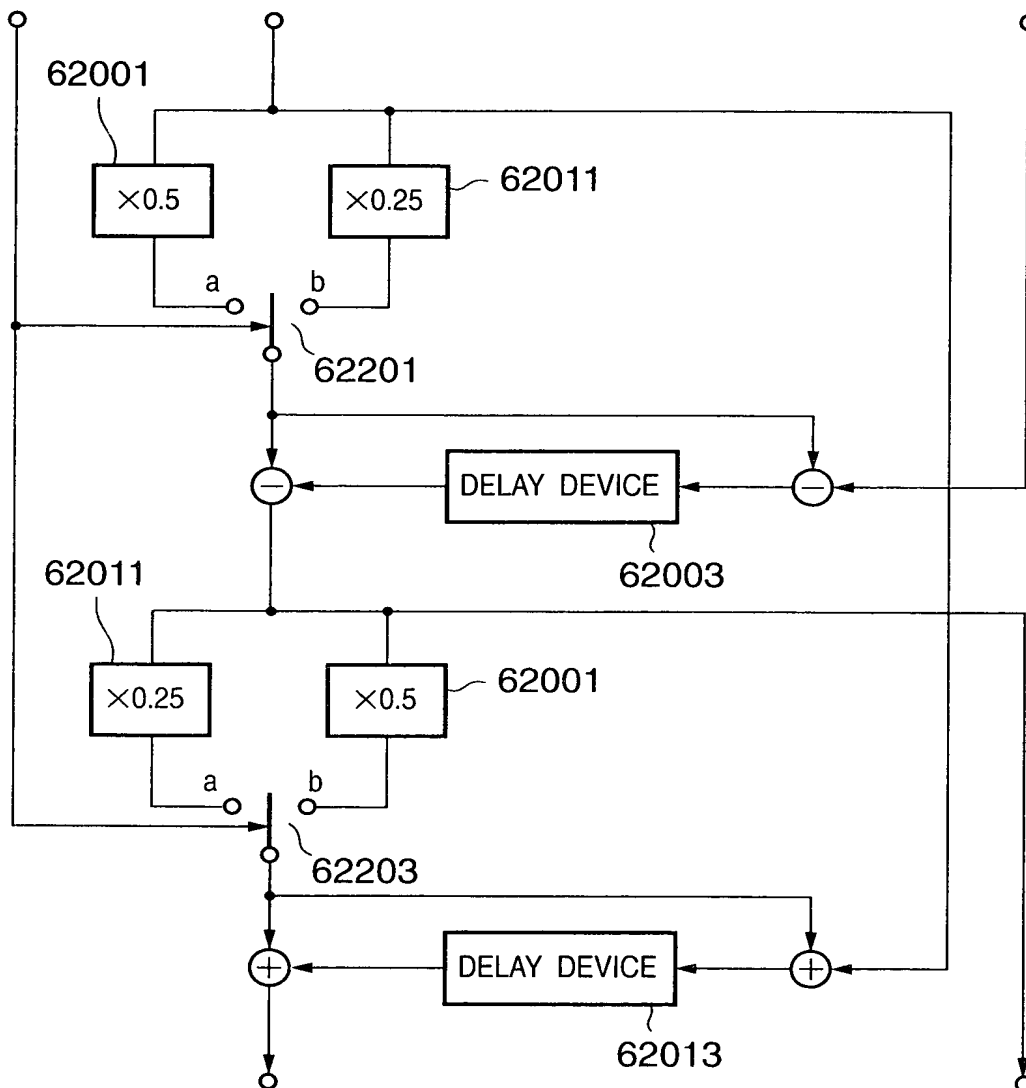
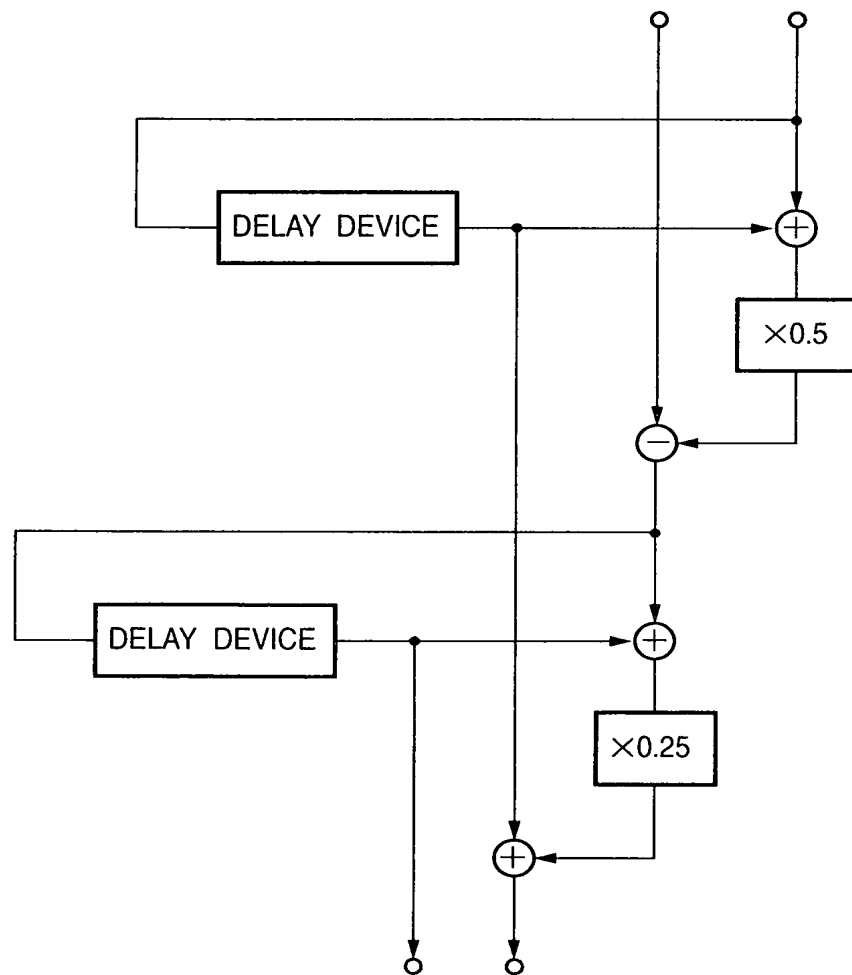


FIG. 90

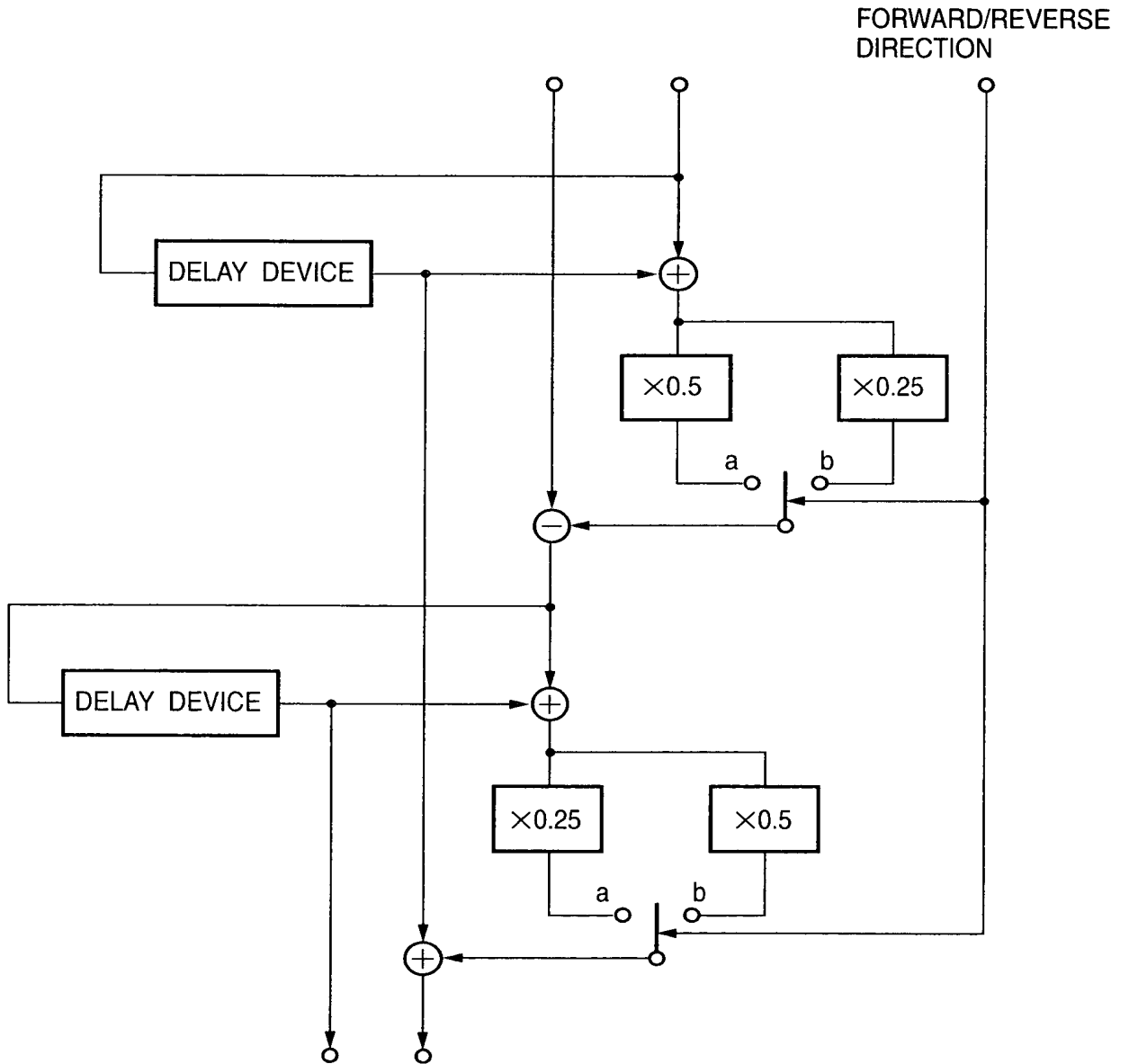
FORWARD/REVERSE  
DIRECTION

**FIG. 91**



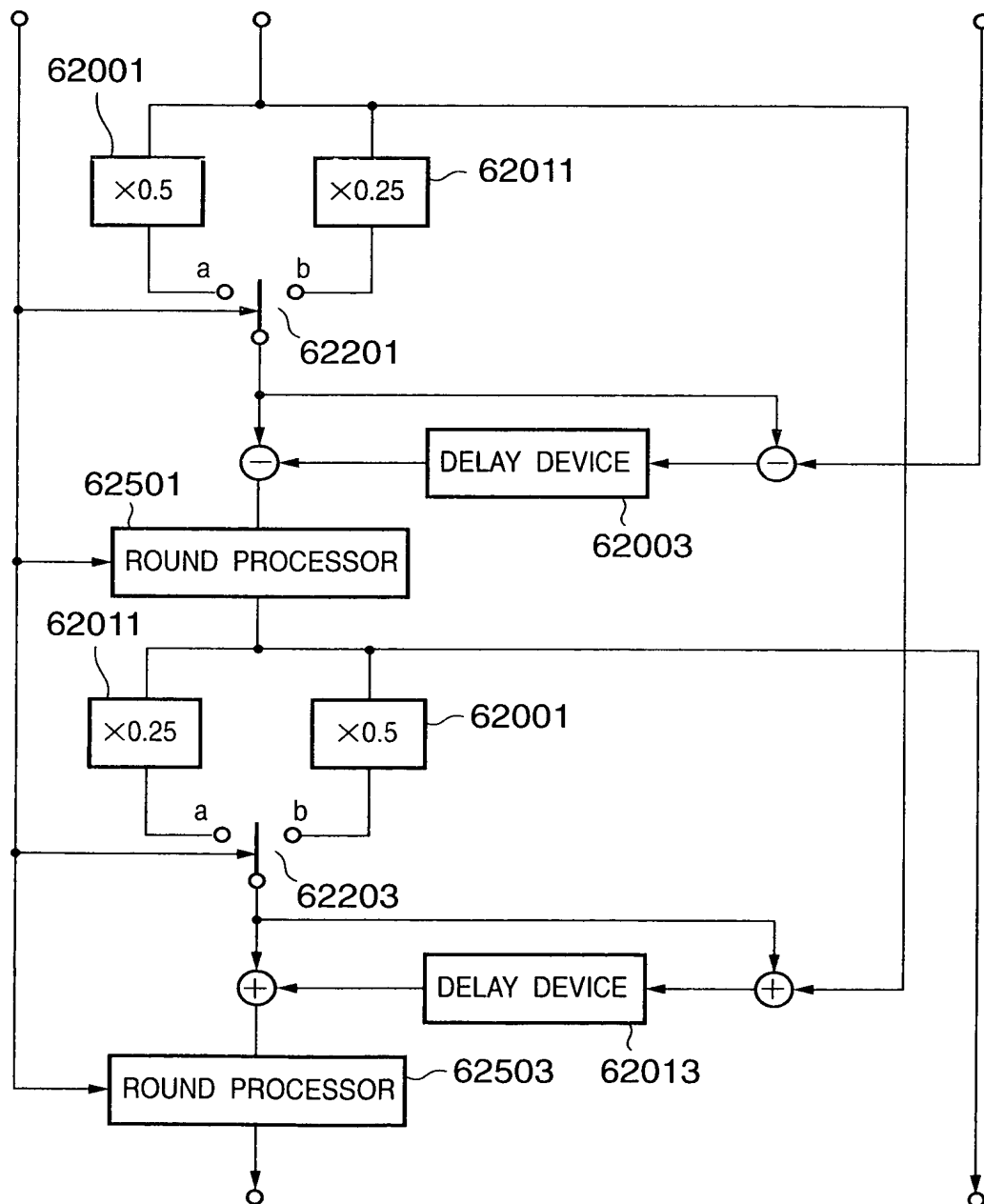
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FIG. 92



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FIG. 93

FORWARD/REVERSE  
DIRECTION

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FIG. 94

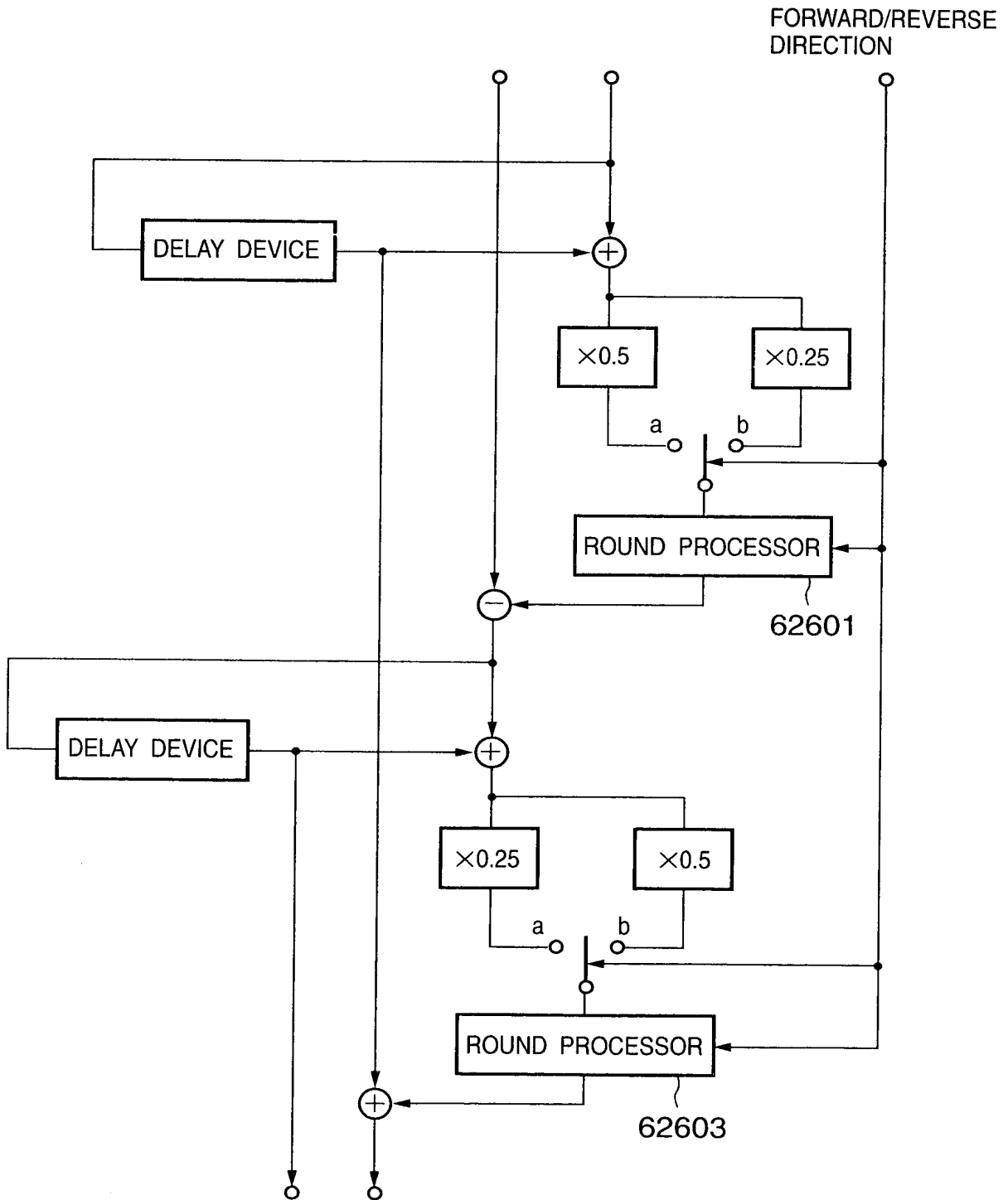




FIG. 96

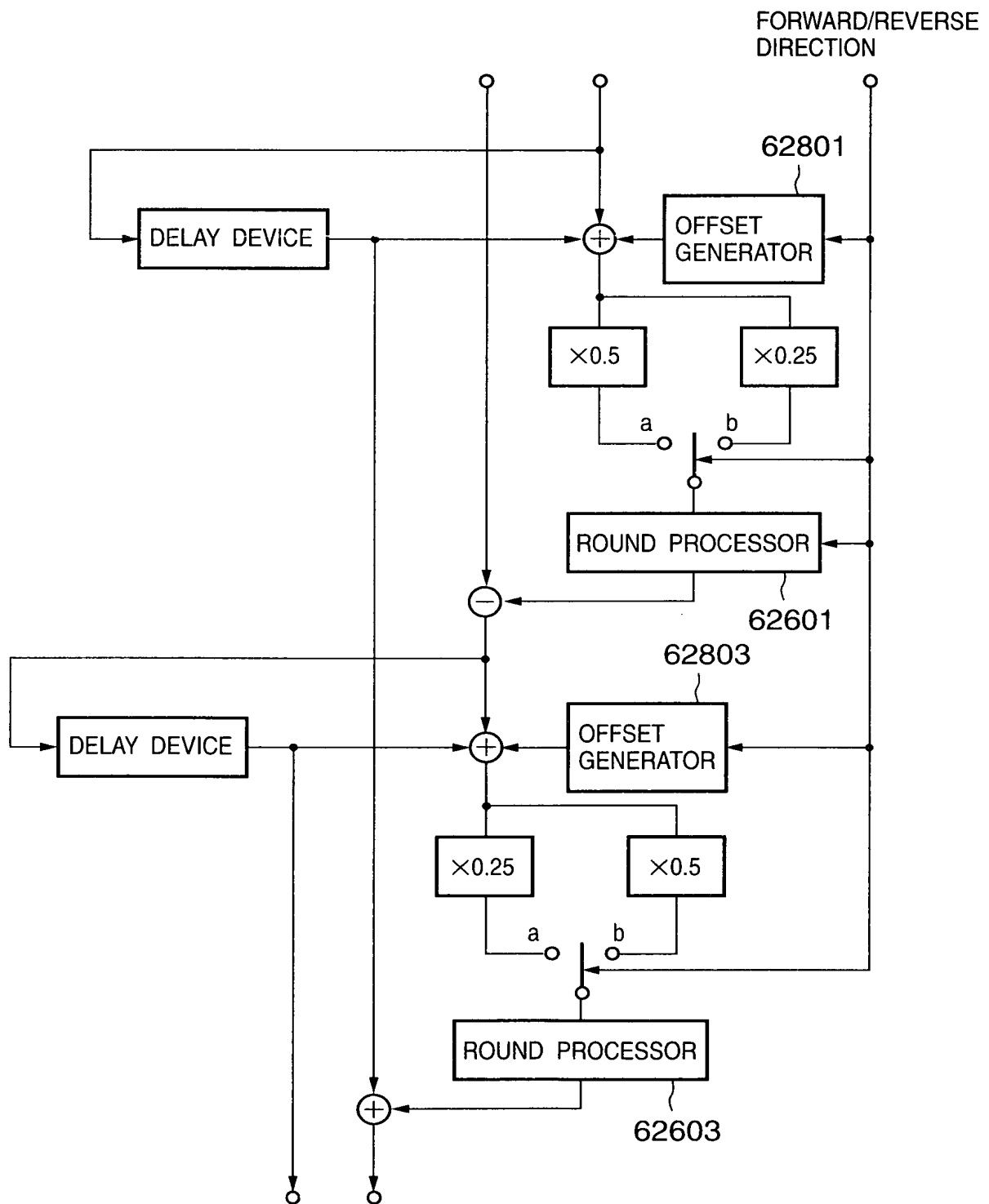
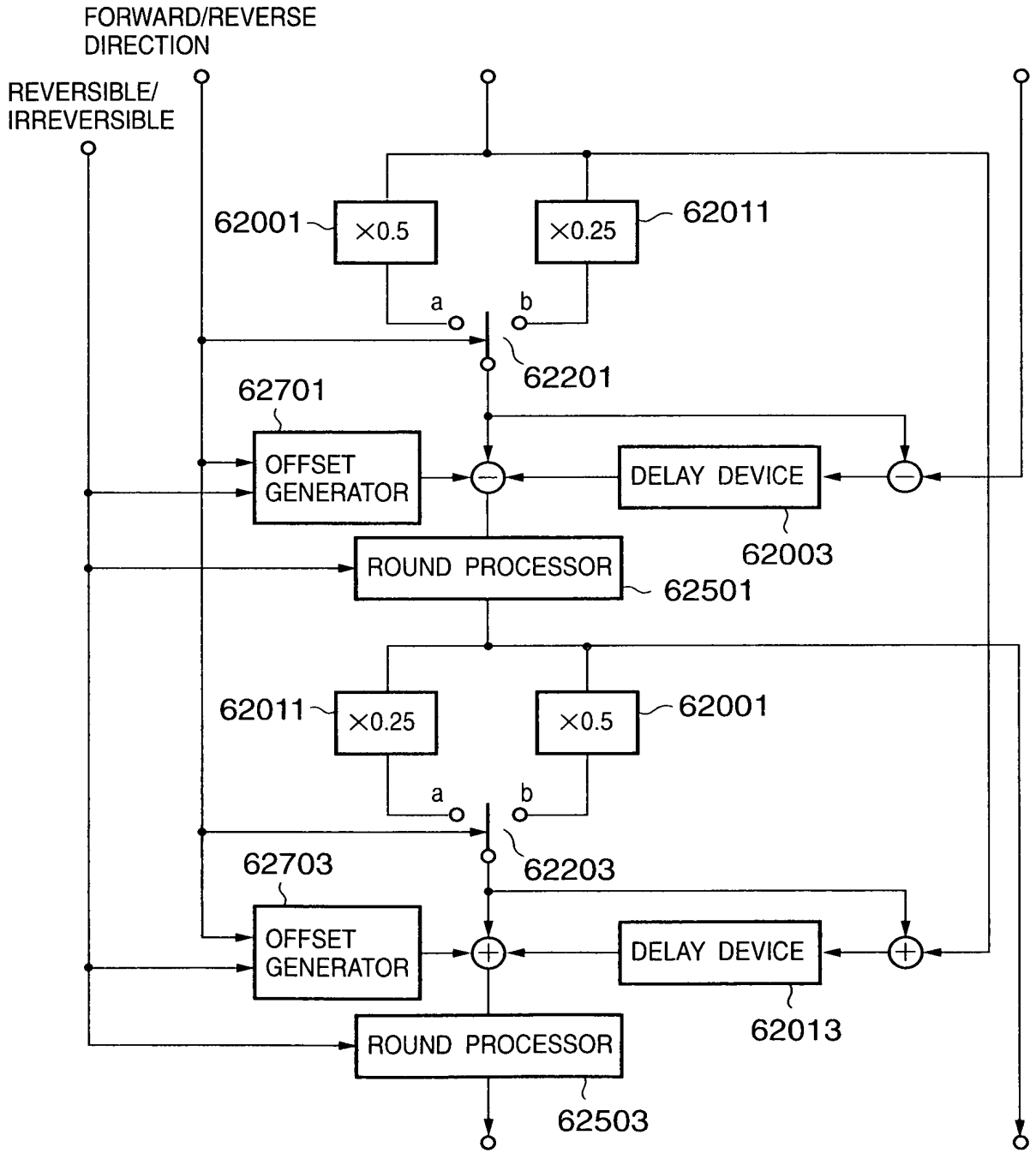


FIG. 97



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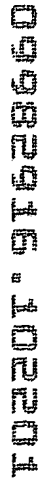
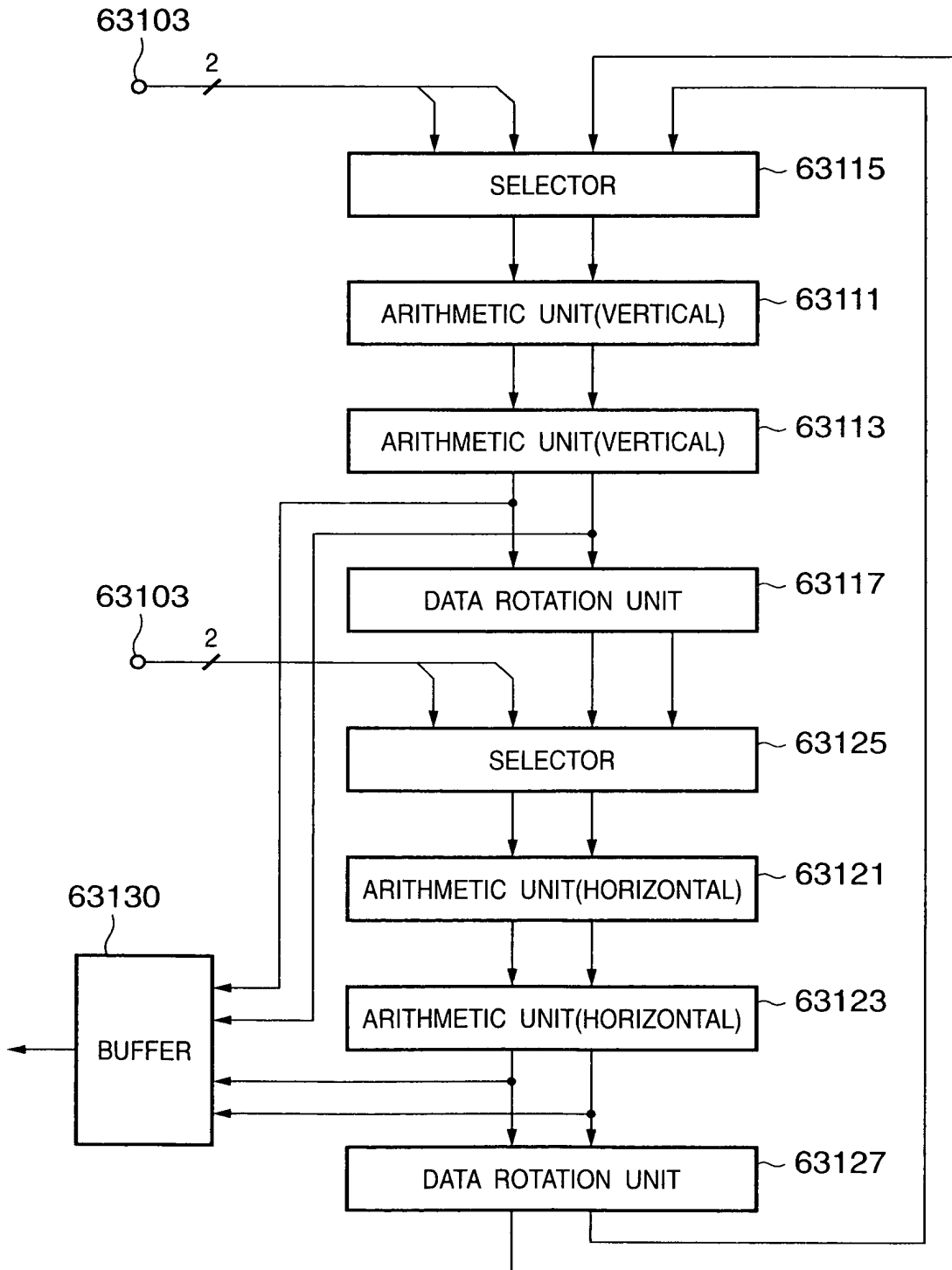
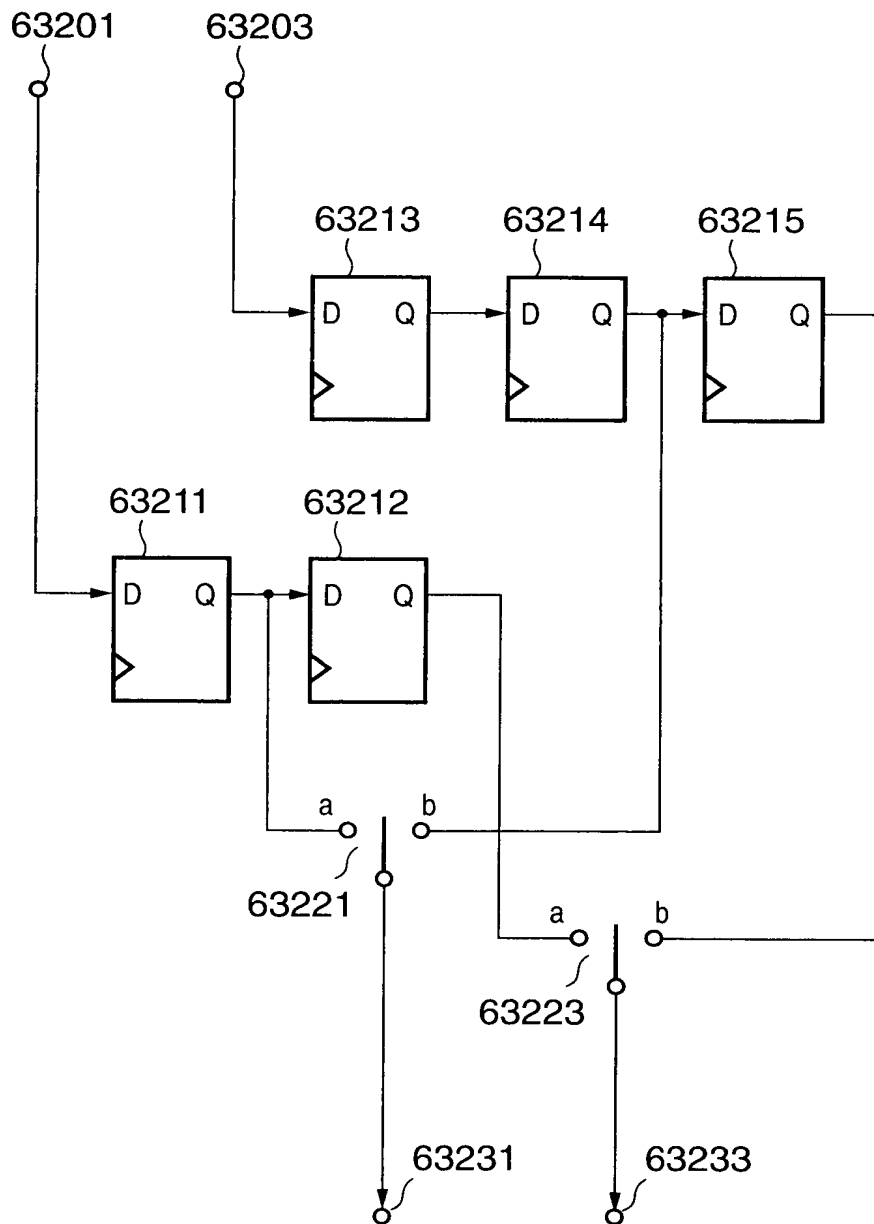


FIG. 99



**FIG. 100**



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**FIG. 101**